Dance Intervention for Adolescent Girls
Dedication

To all adolescent girls
Dance Intervention for Adolescent Girls with Internalizing Problems
Effects and Experience
Abstract


Globally, psychological health problems are currently among the most serious public health challenges. Adolescent girls suffer from internalizing problems, such as somatic symptoms and mental health problems, at higher rates than in decades. By age 15, over 50% of all girls experience multiple health complaints more than once a week and one in five girls reports fair or poor health.

The overall aim of this study was to investigate the effects of and experiences with an after-school dance intervention for adolescent girls with internalizing problems. The intervention comprised dance that focused on resources twice weekly for 8 months. Specifically, this thesis aimed to: I) investigate the effects on self-rated health (SRH), adherence and over-all experience; II) evaluate the effects on somatic symptoms, emotional distress and use of medication; III) explore the experiences of those participating in the intervention; and IV) assess the cost-effectiveness.

A total of 112 girls aged 13 to 18 years were included in a randomized controlled trial. The dance intervention group comprised 59 girls, and the control group 53. In paper I, the dance group showed increased SRH scores compared to the control group ($p = .02$). Girls in the intervention group showed high adherence and a positive overall experience. In paper II, the dance group exhibited a decrease in somatic symptoms ($p = .021$), emotional distress ($p = .023$) and use of medication ($p = .020$) compared to the control group. In paper III, a strategic sample of 24 girls was interviewed. Qualitative content analysis was performed, and five generic categories emerged. Two were “An Oasis from Stress” and “Supportive Togetherness”, which was shown to represent the fundamental basis and setting of the intervention. The main category, participants’ central experience, was understood as “Finding embodied self-trust that opens new doors”. Paper IV revealed that, due to decreased number of visits to the school nurse and an increase in health related quality of life; the intervention was considered to be cost-effective (combined with the usual school health services). In summary, the results of this thesis show that this dance intervention for adolescent girls with internalizing problems generated positive health effects and proved to be cost-effective. For this target group, a non-judgmental environment and supportive togetherness proved to be of importance for participation. The results of this study may provide practical information for school health care staff and caregivers in designing future interventions.

Keywords: Adolescent Health, Body Awareness, Cost Effectiveness, Dance, Enjoyment, Physical Activity, Randomized Controlled Trial, Self-rated Health

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Original Papers

This study is based on the following original papers:


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*Submitted*


*Submitted*


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Something About the Dance

Barefoot on the floor
She is taking dance steps
Not move away steps
Not sorry to disturb steps
Not walk away in shame steps
Not hope you can’t hear me steps
But dance steps

I was there and I couldn’t stop thinking:
all this time you had it in you
the rhythms were already there
unreachable
now: reachable.

I was there this moment watching her
becoming more of who she is
becoming more than she thought she
could be.

Barefoot on the floor
She is moving like the air is suddenly her own.
Not everybody else’s air
Not I’m sorry that I breathe air
Not I hope you can’t see me air
But her own air

And her body, wordlessly deserving
to be there,
to be her own.

There is something about the dance,
she said,
something in how it makes me feel
and then
she smiled.

Duberg, A, 2012, Poetry in Pediatrics 82
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INTRODUCTION

In my profession as a primary care physiotherapist, I met several adolescent girls who sought care for headache, backache or stomach ache. Not seldom in my treatment room, I was told about worries and loneliness. My experiences showed me that each and every person I met carried her own subjective reality and that health issues had its’ source in life and was stated in the body.

For me, the fact that feelings are shown in bodily posture and movement patterns, “the way you feel, you move” is fascinating. Perhaps this fascination arises from the transformational possibilities of the reverse: “the way you move, you feel”. As a physiotherapist, this knowledge is integrated in my therapeutic work. As a dancer, I know this by heart. The human ability to use movement and body awareness to increase health is perhaps one of the most under-utilized tools we have. Personally, this insight emerged in a more pronounced manner as I started working in child and adolescent psychiatry. Underneath the rollercoaster mind, we, as humans, have a solid foundation of embodied resources that provides grounding, centering and energy balance.

Paying attention to the body in movement is one way to immediately bring our focus to the present moment, which substantially reduces stress. Taken together, this is potential bodily tools waiting to help us bloom and out-compete negative thoughts and worries. How can we broaden the use of this? Moreover, how can we underpin the human need for belonging to a group? To meet the challenge of reducing the burden of mental health problems for adolescent girls, it is my belief that we need resource-focused body-anchored methods in addition to existing health care. In what way and how, however, is still to be further explored. Physiotherapists can often propose several methods, and dance might be a creative new avenue. I hope that this thesis will inspire further development of movement-based group interventions for adolescents, and contribute to resource-focused health care work.

In all, my research journey began with a phone call and a question about whether I could be a dance instructor in a project. Initially, I had no intention of aiming for a doctoral degree; now, research will always be a part of my work, and I will never tame my curiosity. We have only just begun!
## Definitions

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Adolescence</td>
<td>A transitional period of physical and psychological development, the individual’s transition from childhood to adulthood (^{10}).</td>
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<td>Dance</td>
<td>The movement of one or more bodies in a choreographed or improvised manner with or without accompanying sound (^{30}).</td>
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<td>Emotional Distress</td>
<td>Describes a person who feels stressed but does not suffer from any disorder (^{176}).</td>
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<tr>
<td>Mental Health</td>
<td>A state of well-being in which the individual realizes his or her abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community (^{274}).</td>
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<tr>
<td>Mental Ill Health</td>
<td>Includes mental health problems and strain, impaired functioning associated with distress, symptoms, and diagnosable mental disorders (^{92}).</td>
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<tr>
<td>Internalizing Problems</td>
<td>Introverted symptoms (less obvious than externalizing problems such as hyperactivity and aggression) (^{243}). Examples of internalizing problems are anxiety, nervousness, sadness and somatic symptoms, such as headache and stomach ache.</td>
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<tr>
<td>Term</td>
<td>Definition</td>
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<tr>
<td>Intervention</td>
<td>Structured and standardized efforts or programs to rectify problems</td>
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<td>Physical Activity (PA)</td>
<td>Any bodily movement via skeletal muscles that results in energy expenditure</td>
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<tr>
<td>Quality-adjusted Life Year (QALY)</td>
<td>Measurement used in health economic evaluations to compare treatments and</td>
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<td></td>
<td>interventions that may influence quality of life and life span</td>
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<tr>
<td>Self-rated Health (SRH)</td>
<td>The individuals’ perception of and evaluation of his or her health.</td>
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BACKGROUND

Adolescence is associated with a number of major changes and challenges. Physiological; the onset of puberty and physical growth, psychological; cognitive advances, personality development; existential thoughts, questions of personal values, and contextual; the importance of the peer group. These changes and challenges are faced by all adolescents and are grounds for growth, but often for many also associated with the onset or exacerbation of a number of health-related problems.

Internalizing Problems in Adolescence

Psychological health problems are currently among the most serious global health challenges and affect 10–20% of children and adolescents worldwide. The frequency of internalizing problems, such as somatic symptoms and mental health problems, among adolescent girls is higher than it has been in decades. This is highly concerning for the individual suffering and for public health, economic development and societal welfare. Reducing mental health suffering and supporting positive development in adolescents are important public health issues. Research show that behaviors established during adolescence can continue into adulthood, affecting mental health and the development of health complaints.

Internalizing problems in adolescence are linked to social difficulties and academic failure, and suicide attempts. A Swedish study from 2015 highlight that internalizing problems in girls constitutes a complex symptomatology, linked to serious physical and psychological symptoms’ e.g., depression, perceived attention problems, negative self-image and bodily distrust. Research has shown that there is a clear relationship between somatic symptoms (such as headache and stomach ache) in adolescence and depression and mental illness later in life. A high number of symptoms predict a more severe depression.

The latest cross-national study from the World Health Organization (WHO), “Health Behavior in School-aged Children” (HBSC) 2013/2014, surveyed 42 countries in Europe and North America and was published in 2016. That study showed that marked declines occurred in the subjective well-being and life satisfaction during the adolescent years, especially for girls. By age 15, one in five girls reports fair or poor health and 50% experience multiple health complaints more than once a week. Body dissatisfaction also increased significantly during this period for
girls, particularly in western and central European countries. Also other studies show that girls reported a higher prevalence of mental health problems, used more medication, and were more likely to experience depression than boys. Girls have also been shown to experience more guilt, self-blame, feelings of failure, sadness, and fatigue than boys. Overall, girls report higher rates of somatic symptoms than boys, with consequent decreases in their quality of life. In Sweden, the prevalence of hospital care for the treatment of mental ill health has doubled in the last decade.

Important explanatory factors for adolescent girls’ mental health complaints include perceived stress, inner pressure, self-imposed high demands, and low global self-esteem. Also perceived high demands in school and high responsibility-taking have been highlighted as possible contributors to mental strain in adolescent girls.

**Somatic Symptoms and Mental Health Problems**

DSM-5, the current manual used by clinicians and researchers to diagnose and classify mental disorders, presents the following definition of somatic symptom disorder: “One or more somatic symptoms that are distressing or result in significant disruption of daily life.” Examples are pain and fatigue, and common symptoms in children are recurrent abdominal pain, headache, fatigue, and nausea. The symptoms may or may not be medically unexplained.

The changes in DSM-5 in 2013 removed the previous mind-body separation in DSM-IV, and encouraged clinicians to use clinical judgment rather than a checklist to help patients getting the help they need.

Theorell stated in 2001 that “it has become evident that no distinction can be made between psyche and body. Even when we are engaged in thinking and do not perform any physical acts, bodily changes can be observed that are associated with these specific thoughts. Accordingly, all life situations that arouse the body are reflected to some extent in biological changes.” Associations between mental health problems and somatic symptoms in adolescents have been proven repeatedly. Stress is assumed to induce muscular tension, which in turn triggers the nociceptive process. Prolonged stress can substantially impair an individual’s ability to cope with daily life, and can lead to cognitive impairment which may have functional consequences.

Bodily symptoms such as headache and stomach ache are connected to perceived stress and nervousness, and stress may heighten pain experiences.
ence for adolescents. Kinnunen et al highlight that headache, stomach ache, vertigo, tiredness, aching shoulders, and backache are common examples of somatic symptoms that are important signals of mental health. Several symptoms tend to co-exist, potentially imposing limitations on daily living and participation in school life.

In the Swedish HBSC study (2013/14), a combination of two somatic or mental symptoms more than once a week is experienced by 57% of the girls and by 31% of the boys by the age of 15. This number has doubled since 1985/86.

Prevalence studies published 1991-2009 of chronic and recurrent pain, showed that headache was the most commonly reported symptom in youth. Also in Sweden, headache has shown to be the most commonly reported somatic symptom. By the age of 15, headache more than once a week was reported by 29% of the girls and 13% of the boys, and stomach ache more than once a week was reported by 22% of the girls and 9% of the boys. Regarding mental health problems, the same study showed that by the age of 15, sadness more than once a week was reported by 36% of the girls and 14% of the boys, and nervousness more than once a week was reported by 31% of the girls and 16% of the boys.

A national internet-based survey in Swedish that included 148,395 children, adolescents and young adults from 10 to 24 years old showed that 30% of the girls and 19% of the boys considered themselves to be stressed very often. In Örebro, Sweden, the region where this study was conducted, somatic and mental symptoms experienced “often” or “always” during the last three months were as follows for girls aged 13, 15 and 17 years old in 2014 (values for boys are shown in parentheses): headache 23% (8%), stomach ache 22% (8%), neck shoulder pain 21% (9%), stress 46% (19%), irritation 34% (20%), anxiety 24% (8%).

Use of Medication
The use of medication, mainly the use of analgesics for aches and mental health problems, has been shown to debut at the age of 12 for girls, and then increase with age. Young people who report fairly poor or poor health, report higher medication use for various disorders, compared with those reporting good health. Adolescent girls receive medication for depression and anxiety symptoms twice as often as young men and use medication for headaches and stomach problems to a greater extent than men.
The prevalence of 15-year-olds who use medication for headache has been reported to be 53% for girls and 37% for boys. In overuse, the substances are potentially toxic and may have adverse effects; for example, paracetamol can cause liver damage, and non-steroidal anti-inflammatory drugs (NSAIDs) can cause gastrointestinal disturbances; thus, identifying alternatives for pain relief is desirable.

**Health Economics**

Internalizing problems not only may impose disability and decreased quality of life for individuals, but also high societal costs. Problems likely continue into adulthood, and internalizing problems are very costly. In Sweden, the societal cost of depression was estimated at 400 million euros in 2005. From an economic perspective, it is important to determine whether money invested generates health or not, and society has a right to demand that the interventions offered are based on scientific evidence and are cost effective.

Health economic evaluations can investigate whether one intervention is cost effective compared with another by comparing the cost of that intervention with the values of gained health and decreased societal costs. These evaluations are based on maximization, in which decision-makers consider how to optimally allocate an existing budget. The aim is not to save money but to use existing resources in a manner that maximizes the health provided. Overall, there is a need to increase the use of health economic evaluations in health-promotion interventions.

**Gender Differences**

As described previously, there is a gendered pattern in adolescent mental health problems. Explanations for this pattern must be explored further. However, some factors have been suggested:

- Girls experience more stressors than boys and thereby perceive more stress symptoms.
- Girls are more exposed to interpersonal stress and tend to be more sensitive to others’ reactions to their successes and failures.
- Girls are more mature at this period of life than boys and thus experience life as more serious and demanding.
• Adolescent girls encounter socially shaped contradictory expectations and tend to adapt to and live up to the needs and expectations of others more than boys 265.
• Unequal power relationships and cultural norms of femininity and masculinity are more strenuous for girls, placing them at a possible disadvantage with regard to mental health 153.
• Social factors and processes, particularly responsibility, are important for adolescent mental health as girls more often experience the negative aspects of these processes 153.
• As stated in the objectification theory by Fredrickson & Roberts 101, girls and women are at risk of adopting the observer’s perspective as the primary view of their physical selves. This focus on the body’s external appearance has negative consequences, and objectification has proven to be a possible predictor of depression among young women 133.

Strategies and Recommendations
As adolescence is a developmental period of life during which the foundation for later mental health is laid 32, 143, interventions can lead to substantial differences. Promoting mental health in adolescents is an investment for the future 92, 238, 276. Furthermore, the WHO calls for more engagement and additional prevention programs related to adolescent health and well-being, and, specifically for girls; mental health promotion emphasizing strengthening self-esteem 275.

To prevent mental problems, there is a clear need for the development of interventions that are sustainable and cost effective 126, 172, and preferably addressed to behaviors and social conditions that have both short-term and long-term health consequences 108. Paying attention to the persistent gendered patterns in SRH and well-being is necessary because girls report lower subjective health 275. Boys and girls may react differently to mental health interventions 178, and thus, interventions need to be tailored 246, 275. To meet the complex symptomatology of internalizing and stress-related problems in young women, including impaired self-image and body perceptions, body-based methods have been suggested 246.
Physical Activity for Mental Health

Regular physical activity (PA) is related to numerous psychological and physical benefits. The latest Cochrane review on PA and mental health entitled “Exercise for depression” showed that PA reduced the symptoms of depression and improved the quality of life to the same extent as cognitive behavioral therapy (CBT) or antidepressant drugs for mild and moderate depression. The positive psychological effects of PA are also supported by a review from 2015 that recommended at least 30 minutes of PA at least three times a week. PA has been shown to be effective both as an adjunct and as a stand-alone treatment.

PA may positively influence the quality of life and is believed to reduce the costs of medication and hospitalization. In Sweden, guidelines from the National Board of Health and Welfare support the use of PA in both cases of mild depression and for various states of anxiety.

In both the general and collective contexts, PA for adolescents has proven to be an active strategy to prevent and reduce depressive symptoms and anxiety and promote positive thoughts and feelings. Higher levels of PA in mid-adolescence have been proven to be associated with lower levels of depression.

A review from 2014 similarly highlighted the connection between PA and depressive symptoms and also suggested that “healthcare providers can and must provide both health education and health promotion in the adolescent age group to enhance wellness and prevent disease”. School-based programs for promoting PA in children and adolescents (6-18 years old) have shown that those exposed to interventions spent more time engaged in PA. Dishman et al suggest that PA might reduce depression risk among adolescents “by unique, positive influences on physical self-concept that operate independently of fitness, body mass index, and perceptions of sports competence, body fat, and appearance”.

However, research has shown that PA decreases significantly between the ages of 9 and 15 years and that girls exhibit a steeper decline than boys. According to the HBSC study, less than half of adolescents meet the current worldwide guideline for PA ≥60 minutes of moderate- to vigorous-intensity PA (MVPA) daily. The HSBC study also reported that PA was lower among girls in almost all countries, with 20% of boys and 10% of girls meeting the guideline. To gain the benefits associated with PA, adherence plays a vital role. The Lancet published a review in 2012 highlighting the need for public health professionals to tailor policies and programs to promote increased PA for children and adoles-
cents, with specific attention to initiatives that address the needs of disadvantaged subgroups. To achieve success, the board suggested implementing innovative new interventions that add to the evidence base. PA interventions targeting health benefits for adolescents should focus on encouraging activities tailored by gender and enhance enjoyment, autonomy, confidence, and social affiliation.

Dance

Dance is a social form of PA that is popular among girls and young women. As a method of emotional and physical expression, its origins can be traced back 10 centuries to Greek and Egyptian history. Dance emphasizes the expressive, creative, and aesthetic aspects of PA and provides social support for the individuals who participate. There is a wide range of dance styles available, such as jazz dance, ballet, and modern dance, all requiring varying degrees of muscle strength, flexibility, and endurance.

More research on dance is needed, but the following physical and emotional effects of dance have been suggested:

Physically, the benefits of dance include increased flexibility, increased muscle strength, endurance, balance, and spatial awareness; and increased body awareness. It has also been suggested that rhythmic movements may ease muscular rigidity.

Emotionally, dance may promote joyful and confident feelings, increase well-being, and self-esteem, and reduce or eliminate the disabling conditions resulting from stress. Dance movement therapy (DMT) was reported to reduce depression in adult psychiatric patients in a study in 2007. However, a Cochrane review from 2015 by Meekums concluded that more research is needed before conclusions regarding the effectiveness of DMT for depression can be drawn.

For adolescents, some evidence suggests that dance can increase psychological well-being, increase self-esteem, and improve poor body image and physical self-perception. In physical education (PE) in school, dance has been shown to provide an opportunity for fun and enjoyment without the element of competition and an opportunity to practice collaboration with others. However, when activities undertaken in PE in secondary schools in Sweden were investigated, dance was shown to be the least common activity, and about 10% of the students stated that they had never had dance lessons. Ball games were the most common activity. Girls in the study stated that they often felt excluded in ball games. PE lessons have been shown to have the risk of negatively influence PA partic-
ipation by young girls due to boys’ dominance in class and competitive elements.

Regarding the effects of recreational dance on physical and psychosocial health in children and adolescents, a systematic review from 2012 identified fourteen controlled studies in a wide range of settings. The results indicated positive physical benefits (cardiovascular fitness, bone health, and the prevention or reduction of obesity), but the results regarding mental health were more limited. Some evidence was found for improved self-concept and body image and reduced anxiety, but further high-quality research was recommended.

A convincing body of research exists, however, regarding the fact that dance engages girls who are less likely to participate in other organized PA sports. Dance classes also provide valuable opportunities for adolescent girls to be physically active. A dance intervention aimed at increasing PA in adolescent girls was recently conducted in the UK: The ‘Bristol Dance Project’ was a universal intervention that included 18 secondary schools. This trial noted the difficulties encountered in maintaining attendance in PA programs and highlighted the necessity of finding new ways to help adolescent girls to be physically active via identifying ways to support and encourage sustained engagement in PA over their life course.

Cultural Activities

Dance is a cultural activity. Cultural activities encourage creativity thinking and expression. When promoting mental health through meaningful activities, cultural activities have been proven to play a valuable role. According to a review from 2013, such activities were proven to promote mental well-being, healthy lifestyle and positive behavioral changes. Different cultural projects were introduced to children and adolescents to help build communities and increase social engagement, including music, singing, dancing, drama, visual arts, and theatre. The results showed that participating in these different creative activities was empowering and reengaged excluded young people by increasing their self-esteem, confidence, social skills and sense of achievement. Moreover, those participating were less likely to misuse substances. The cultural activities had the potential to address young peoples’ sense of self-worth and life skills, which was highlighted as a mechanism for promoting behavioral change and healthy lifestyles.
This finding is in line with the results of a randomized intervention study of cultural activities for adult women with burnout symptoms \(^{37}\) in which “Culture Palette” comprising six different cultural activities was used: interactive theater, movie, vocal improvisation and drawing, dance, mindfulness training and musical performance. Burnout symptoms/exhaustion, alexithymia (inability to identify and describe emotions), and SRH improved more in the intervention group than in the control group. The authors suggested that the cultural activities might have helped the participants become more aware of their feelings and sensations and allowed them to better describe and identify feelings, through a mixture of and interaction among psychological, neurological and social factors \(^{37}\).

**Body and Movement**

**In Physiotherapy**

Human movement throughout the lifespan is central in physiotherapy. The Swedish physiotherapist Roxendal \(^{214}\) has defined a holistic approach; “The human being is, if healthy, whole and indivisible. The wholeness, in this perspective, embraces the body with physical parts and physiological processes, bodily actions (motor), mental life (perception and cognition), existential conditions and vitality (motivational factors).”

Many physiotherapeutic methods originate from body-awareness \(^{26}\). Physical activity, movement, body awareness training and relaxation training are commonly used methods \(^{168}\), often directed towards the individual’s experienced symptoms, rather than toward the medical diagnosis. The body is perceived as entwined with the whole person and his/her existence in physiotherapy, assuming that experiences of the body in movements and bodily sensations connect immediately and non-verbally to psychological and existential dimensions \(^{71}\).

From a healthcare perspective, a central understanding in physiotherapy is that every person holds her own ability to heal and resources for change within, and that these can be activated by movement in a therapeutic interaction. Personal health status can be influenced through awareness of the body, and movement is seen as the foundation for the human function and a means to achieve goals in relation to the environment \(^{41}\). In a physiotherapeutic healthcare setting, dance can suggestively be used as a tool to increase insight of bodily functions and body awareness \(^{67}\).

Research has shown that body awareness-enhancing therapies may provide psychological benefits for patients suffering from a variety of condi-
tions. The common basis of these therapies is the understanding of the body and mind as inseparable, which is described as the embodied identity or embodied self.

The general phenomenon of embodiment is related to the basic fact that we ‘are’ a body; that is, that we are ‘embodied’. It addresses the roles that body motion and sensorimotor experience play in the formation of concepts and abstract thinking. We perceive feelings from our body related to the body’s internal and external states, providing a sense of our physical condition. Our body tells stories about the conditions of our existence and embodiment is the process whereby the (social) world is literally incorporated into the material body.

The Lived Body
These definitions are primarily based on phenomenological research, often with reference to the philosophy of Merleau-Ponty, the lived body, that reject the dichotomy between body and soul. Merleau-Ponty described the role of the body as central, because we perceive the world through our bodies and, thus, are embodied subjects, involved in existence. He mainly referred to embodiment as the actual shape and capacities of the human body, i.e., it has arms and legs, a certain size, and certain abilities. However, according to Merleau-Ponty, embodiment also plays a central role in the structuring of experience, cognition, and action. It is through the body that we have access to the world, and so, we experience the world through it. Dance has an existential dimension in which the lived body is emphasized.

Theoretical Framework of the Intervention
The dance intervention described in this thesis was underpinned by theoretical frameworks. Self-determination theory (SDT) and social cognitive theory (SCT) are both prominently utilized within the PA context, providing valuable information for the processes of planning and conducting the intervention.

Self Determination Theory
To evaluate the health effects of interventions, it is crucial that adherence over the entire time period of the intervention is achieved. This also applied to the current dance intervention; therefore, Self Determination Theory (SDT) was used as a framework for planning and teaching. SDT concerns motivation and has been applied extensively for understanding.
PA behavior. This theory proposes that individuals have three basic psychological needs: autonomy, competence, and relatedness. The satisfaction of these three basic psychological needs is suggested to support an individual’s inherent ability to promote optimal motivation, and to produce positive psychological, developmental, and behavioral outcomes. Autonomy refers to “being the perceived source of one’s own behavior”, competence refers to “feeling effective in one’s ongoing interactions”, and relatedness refers to “feeling connected to others and to have a feeling of belongingness with individuals and the community”.

Furthermore, SDT proposes that behavioral regulation toward an activity varies, and research has shown that individuals who engage in PA out of enjoyment and intrinsic motivation rather than being motivated by external rewards are more likely to exhibit high adherence. Extrinsically motivated behavior occurs when behavior is regulated by an external pressure, such as an authority, rewards, or the avoidance of punishment. Intrinsic motivation refers to behavior that is performed solely for the pure pleasure or enjoyment of the task itself. For adolescents, intrinsic motivation within certain activities has been shown to be a predictor for the intent to be physically active in the future.

A sub theory within SDT, Cognitive Evaluation Theory (CET), was also valuable in the current intervention. CET specifies the factors that explain variability in intrinsic motivation. When individuals receive tangible rewards or directives for or pressured evaluations of their participation in an already interesting activity, they shift their locus of causality to a more external orientation. Consequently, their intrinsic motivation decreases. By contrast, choice, the acknowledgement of feelings, and opportunities for self-direction increase intrinsic motivation by promoting greater feelings of autonomy. CET also highlights the fact that it is preferable to use informational verbal rewards rather than controlling, which leads people to engage in behaviors specifically to gain praise.

Social Cognitive Theory
Social Cognitive Theory (SCT) is a commonly applied theoretical approach for identifying the underlying mechanisms associated with PA outcomes. The primary variable of SCT is self-efficacy, which concerns the individual’s awareness of their own capability of mastering certain situations. These judgments of capabilities have been demonstrated to be important determinants of the choice of the activities in which people...
engage, the amount of effort put into the activity, and the degree of persistence in the case of failure.

Self-efficacy for PA, which is defined as “an individual’s confidence in his or her ability to be physically active on a regular basis” \(^{158}\), has been one of the strongest and most consistent cognitive correlates of activity level \(^{217, 259}\) and has been shown to predict future PA levels in longitudinal studies \(^{217}\). For adolescent girls to adopt and maintain participation in PA, both self-efficacy and enjoyment are considered key factors \(^{163, 199, 240}\).

Overall, these theories provided valuable guidelines for the development of the current dance intervention for adolescent girls with internalizing problems.
RATIONALE

Mental health problems are currently among the most serious public health challenges worldwide. Adolescent girls now suffer from internalizing problems at higher rates than in decades.

Unfortunately, school health services, primary healthcare and child and adolescent psychiatric care are unable to reach everyone, and when they do, psychological and pharmacological support may not always be sufficient. Moreover, the decline of physical activity in adolescent girls calls for action. Effective and easily accessible interventions are warranted.

Dance is a popular form of cultural and social PA. It has been rarely explored for the prevention and treatment of internalizing problems among adolescent girls. Based on this research gap, important questions have been raised regarding the development of health-strengthening interventions for this target group.

This thesis is anticipated to contribute to the challenging work of reducing the burden of mental health problems for adolescent girls.
AIMS

The overall aim was to investigate the effects and experiences from an eight-month-long dance intervention targeting adolescent girls with internalizing problems.

Specific Aims

- To investigate whether and how a dance intervention for adolescent girls with internalizing problems can influence self-rated health. A secondary aim was to describe the adherence to and the overall experience of the dance intervention (Paper I).

- To investigate whether a dance intervention for adolescent girls can decrease somatic symptoms and emotional distress. A secondary aim was to investigate its impact on the use of medication (analgesics) (Paper II).

- To explore the experiences of girls participating in the dance intervention (Paper III).

- To assess the cost-effectiveness of a dance intervention in addition to usual School health services for adolescent girls with internalizing problems compared with usual school health services alone (Paper IV).
MATERIALS AND METHODS

Design
A randomized controlled intervention trial was conducted between 2008 and 2011. The dance intervention was twice weekly for 8 months from October to May. Both qualitative and quantitative approaches were applied in this work; data were collected with a questionnaire that was administered regularly and with interviews. An overview of the design and data-collection and analysis methods is given in Table 1.

Table 1. Overview of the study design and data collection and analysis methods.

<table>
<thead>
<tr>
<th>Paper</th>
<th>Design</th>
<th>Methods of data collection</th>
<th>Methods of data analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Randomized controlled trial</td>
<td>Questionnaire conducted at baseline and at 8, 12 and 20 months after baseline. Single item question: self-rated health (SRH).</td>
<td>Differences in SRH between groups were analyzed with an independent-samples t test. The change score was analyzed using paired observations. Linear regression analysis was also performed to study the effect of the SRH baseline values on the change score.</td>
</tr>
<tr>
<td>II</td>
<td>Randomized controlled trial</td>
<td>Questionnaire conducted at baseline and at 8, 12 and 20 months after baseline. Questions from “Life and Health Young People”.</td>
<td>Separate independent-samples t-tests compared the control and intervention group. Multiple imputation (MI) was used to estimate missing values for the somatic symptoms and emotional distress variables. For comparisons between groups regarding use of medication, the Mantel-Haenszel Chi Square test was used.</td>
</tr>
<tr>
<td>III</td>
<td>Inductive, qualitative study</td>
<td>Individual semi-structured interviews conducted one week after the intervention had ended.</td>
<td>Interviews were analyzed with inductive content analysis. NVivo was used.</td>
</tr>
<tr>
<td>IV</td>
<td>Cost effectiveness</td>
<td>Questionnaire at baseline and at 8, 12 and 20 months after baseline. Health Utility Index Mark 3 (HUI3). Visits to school nurse.</td>
<td>Gained quality-adjusted life year (QALY), measured with the HUI 3, and net costs were used to calculate an incremental cost-effectiveness ratio (ICER). Last observation carried forward (LOCF) was used to handle missing values.</td>
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</table>
Participants and Setting
This trial was conducted in a Swedish city with a population of 130,000. The study population comprised adolescent girls aged 13–18 (mean = 16) years old who met the inclusion criteria.

Inclusion and Exclusion Criteria
Inclusion criteria were repeated visits to the school nurse for internalizing problems, such as somatic symptoms and/or mental health problems. For example,

- headache
- stomach ache
- tiredness
- aching shoulders or back
- stress
- sadness
- anxiety
- nervousness

Exclusion criteria were severe hearing impairment, intellectual disability, severe difficulties with the Swedish language, or advice against participation by Child and Adolescent Psychiatric Care (depression was not an inclusion criterion or an exclusion criterion; see “Pilot Study” below).

Gender Perspective
The primary reason for targeting only girls in this study was that mental health problems were almost three times more common among girls than in boys\(^{99, 159}\). We wanted to investigate an intervention that was likely to be in line with girls’ interests and to contribute to strengthened health on the girls’ own terms. Moreover, we aimed to target girls regardless of their religious and ethnic backgrounds, which was facilitated by the “girls only” setting.

Pilot Study
A meeting with the region’s school nurses generated an agreed-upon collaboration. This was the starting point for a 4-week pilot study that was conducted in the spring of 2008 with 7 girls who were recruited by one school nurse. The aim of this pilot study was to evaluate the feasibility of
the dance class design and to test the questionnaire before starting the primary study. The findings revealed that the girls thought that no changes should be made to the dance intervention; they appreciated the setting and demand less atmosphere, duration (two times a week), time (75 min), a group setting and choices in the dance class design. The girls reported no problem in responding to the questionnaire; however, when data from the pilot study were analyzed, new and valuable insights emerged.

First, when initiating the pilot study, our aim was to target girls with internalizing problems, not depression. Therefore, we used the Center for Epidemiological Studies Depression Scale for Children (CES-DC) as a screening instrument, and we set the cut-off at CES-DC ≥28 (max. depressive symptoms = 60) to only include girls who rated under 28. However, the pilot study revealed that 6 of 7 girls had scores exceeding 28. We therefore consulted an experienced expert (Prof. Anna-Lisa von Knorring, Uppsala, Sweden). We were advised to increase the cut-off level for inclusion from 28 to 34 to more appropriately reflect the current health situation of the target group. Moreover, we were advised to not automatically exclude those who scored higher but rather to investigate whether they needed more or other support. Thus, an amendment was submitted to the Regional Ethical Board of Uppsala, Sweden, and subsequently approved as follows:

1) Girls who rate < 34 are included in the study.

2) Girls who rate ≥ 34 are offered a diagnostic interview conducted by a psychologist and/or psychiatrist. Interviewers follow the interview guide M.I.N.I. KID (=a short structured diagnostic interview, developed for DSM-IV and ICD-10 psychiatric disorders).

3) Girls with suicidal thoughts are referred by the school physician to CAP at the University Hospital (Örebro).

4) Girls who are screened for inclusion in the dance project at the diagnostic interview are included.

Notably, although 10-17% of the girls required this consultation (Table 10) during the study, no one was advised to terminate their participation in the intervention.
Procedure
From the start, the study was called “the dance project”.

Type of Intervention
Interventions and prevention programs are categorized as follows: 1) Universal: designated for everyone in a population without regard for possible risk factors. 2) Selective: designated for risk groups, such as those with risk factors related to poor mental health. 3) Indicated: designated for those who already have symptoms, such as diagnosed depression. The intervention in this study targeted adolescent girls with internalizing problems (not diagnosed depression) and was thus performed on a selective level.

Power Calculation
We assumed that a 25% difference between the groups could be expected with regard to decreased somatic symptoms, with a 5% significance level and 80% power; thus, 58 participants were required in each group. Based on these calculations, we estimated that we needed to include 116 individuals. However, because drop-outs could be expected over the extensive 8-month intervention time period and long-term follow-ups, we included 135 individuals.

Recruitment and Randomization
Recruitment for the primary study was performed in collaboration with School Health Services, starting in summer 2008. The school nurses communicated with eligible girls and provided written and oral information (which noted the inclusion criteria and that no previous dance experience was required to participate). The school nurses also invited them to our informational meeting, which was held after working hours, to welcome both adolescent girls and their parents/guardians. The informational meeting also provided an opportunity to pose questions to the project team. After the meeting, those who agreed to participate provided written consent. For girls aged <15 years, written consent was also provided by their parents/guardians. The baseline questionnaire was administered over the following days. Twenty-eight schools in the region were invited, and 21 schools joined the study. As shown in Figure 1, of the 160 girls who were assessed for their eligibility by a school nurse, 13 declined to participate, and 9 were excluded (5 did not meet inclusion criteria, had “too good health” and 4 could not participate in dance because the times did not suit
them). A total of 138 girls were included during the first year, and an additional 24 were included the second year.

This group totaled 162 participants, but the 50 girls who were randomized to the control group in the first year and crossed over to the intervention group during the second year were not included in the analyses because they had participated in the study for a year, and their experiences and expectations could affect the data. Consequently, 112 girls are included in these analyses (control group n = 53, intervention group n = 59). For the girls that began during the first year, 2/3rds were allocated to the control group, and 1/3rd was placed in the intervention group. During the following year, a new randomization was conducted, and it included 24 new girls, as shown in the flowchart.

Randomization was performed by an external statistician using a computerized randomization list. Participants in the control group were encouraged to carry on with their lives as usual. For ethical reasons, the control group was offered the same dance intervention after the study had ended. They also received a cinema ticket as compensation each time they completed the questionnaire. School health services were available to all participants when needed, as usual.

The questionnaire was distributed regularly during the study period (Table 2), and it was completed in an auditorium at the university hospital after school hours. This session was supervised by at least three members of the project team. However, if a girl could not attend at that specific time, she could also fill out the questionnaire at home and return it in a prepaid return envelope. At every follow-up, the CES-DC score were calculated as soon as the questionnaires were collected, and as described in the “Pilot Study” section, girls who rated ≥ 34 were provided with a diagnostic interview conducted by a psychologist and/or psychiatrist.

Table 2. Time-points for Questionnaire Follow-ups. BL= baseline, m=months, # = number of follow-up.

<table>
<thead>
<tr>
<th>Questionnaires</th>
<th>BL (#1)</th>
<th>4 m (#2)</th>
<th>8 m (#3)</th>
<th>12 m (#4)</th>
<th>16 m (#5)</th>
<th>20 m (#6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclusion 2008</td>
<td>Oct-08</td>
<td>Feb-09</td>
<td>May-09</td>
<td>Oct-09</td>
<td>Feb-10</td>
<td>May-10</td>
</tr>
<tr>
<td>Inclusion 2009</td>
<td>Oct-09</td>
<td>Feb-10</td>
<td>May-10</td>
<td>Oct-10</td>
<td>Feb-11</td>
<td>May-11</td>
</tr>
</tbody>
</table>
Approximately 4500 schoolgirls aged 13 – 18 y in Örebro, Sweden

160 assessed for eligibility by school nurse

13 declined to participate

9 excluded = 5 did not meet inclusion criteria + 4 could not participate in dance

138 randomized (2:1)

24 new intake

94 control group

44 dance intervention

24 randomized

94 randomized

50 dance intervention (not included in analysis)

9 control group

44 control group

15 dance intervention

53 controls

59 dance intervention

Figure 1. Randomization Flowchart.
Dance Intervention

This after-school dance intervention occurred in a central gym twice weekly for a period of 8 months, and it was conducted twice in 2008-2009 and 2009-2010. The 8-month time period was chosen because it corresponded to two school semesters. No classes were held during holidays, and thus, 48 dance classes were held over 24 weeks. Each dance group included approximately 20 girls with different levels of dance experience. The intervention was guided by three educated dance instructors, two each year (I was a dance instructor during both years). We mostly performed the intervention with one instructor at a time, but in the beginning, sometimes two instructors were present to establish a feeling of community. The dance intervention aimed to facilitate resource-focused development by enjoyment, creativity, socialization and body awareness in a demand less environment.

Taken together, the key aspects in the dance intervention were as follows:

- Demand-free and nonjudgmental environment. The focus was not on performance, the goal was to dance just for the enjoyment of dance itself, not to achieve perfection or rehearse for a show.
- Focus on resources. The girls’ internalizing problems were not discussed during the dance classes.
- Relatedness. To provide a feeling of social inclusion, supportiveness and a chance to meet new friends.
- Competence. To make the girls feel competent in all aspects of the dance class regardless of previous experience.
- Autonomy. To give the girls opportunities to provide input regarding the dance classes about music and dance themes, give them alternatives, and encourage them to create a part of the choreographies on their own.
- To offer a non-competitive physical activity with cardiovascular and strengthening effects.
- To create space for the girls to “just be” in the present movement.
- To enhance body awareness.

Notably, “the dance project” promoted and highlighted dancing (both choreography and free dancing) but also included other essential components, such as relaxation and reflection. Thus, the current papers examine the effect of the whole intervention, not the dancing per se. Each dance class lasted 75 minutes and included a warm-up, dance practice, relaxa-
tion prompted by a light massage in pairs, and a short reflection. A detailed overview of the dance class is presented in Table 3.

Table 3. The 75-min dance class (developed by Anna Duberg).

<table>
<thead>
<tr>
<th>Min.</th>
<th>Section</th>
<th>What?</th>
<th>Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Warm up</td>
<td>Warming up with large movements, often African dance to rhythmic music with drum beats.</td>
<td>Warming-up prior to exercise is vital for attaining optimum performance and leads to increased preparedness for the subsequent exercise task. An African dance style was chosen because of its prominent, captivating rhythm and inviting and easy moves. African dance has been shown to increase positive affect and reduce perceived stress and negative affect in young adults.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Improvisation (&quot;responding spontaneously to music in order to create a composition that allows for exploration of movement&quot;) performed individually (non-structured movement in the room)</td>
<td>To explore embodied creativity and curiosity. Using improvisation in dance classes is believed to help the dancer relate to how the body moves and develop confidence in movement by experimenting with unconventional and different methods. Enhanced body awareness and quality of movement can enhance self-awareness and interpersonal interactions.</td>
</tr>
<tr>
<td></td>
<td>Preparation practice, i.e. strength, stretch or joint articulation</td>
<td>Preparation practice, i.e. strength, stretch or joint articulation</td>
<td>To prepare for the planned choreography and prevent muscle strains. Different focuses for different dance themes.</td>
</tr>
<tr>
<td>40</td>
<td>Dance practice</td>
<td>Choreography, structured dance to a musical theme with a focus on enjoyment rather than performance (20 min)</td>
<td>To dance together as a group under the guidance of an instructor. Focusing on enjoyment is believed to be important to increase participation in physical activity (PA) among adolescent girls.</td>
</tr>
</tbody>
</table>
|      |               | Improvisation in pairs and the group, i.e., mirroring or giving impulses. One goal is to encourage the girls to | To strengthen togetherness and develop creativity and expression. Dance improvisations are characterized by ephemeral movement structure, and when dancers share this experience, they practice decision-
| 15 | Relaxation | Light massage in pairs, on shoulders or back (5 min). Similar to the massage techniques used in Basic Body Awareness Therapy 165 | To decrease stress and become closer to the other girls in the group. Research on massage for a variety of medical conditions and stressful experiences has shown its stress-alleviating effects, such as decreased cortisol and increased serotonin and dopamine 98. |
| 5 | Reflection | Voluntary sharing on what part of the session or what dance move was most interesting or fruitful for them during this particular session. | To come together as a group by sharing experiences while seated in a circle. Highlighting a positive or powerful experience can facilitate prolonged positive feelings. |

The intensity (of warm up and dance practice) was intended to mostly correspond to moderate to vigorous PA (MVPA), to contribute to the existing recommendations of 60 min MVPA/day 272. For example, if the given dance choreography included many slow movements (as is sometimes the case in lyrical/contemporary dance), then the warm-up with rhythmic African dance was extended and included a great deal of jumping. During the intervention year, a number of different dance style themes were presented. Six different choreographies were introduced and varied, including show-jazz, street dance and contemporary dance. Throughout
the dance class, popular music was used, and the girls were always able to make music suggestions.

The choreographies were created both by the main-instructor (me), and also in cooperation with co-instructors. To ensure variation in this creative process, the Laban Movement Analysis (LMA) \(^{152}\), was sometimes used as an inspiration. The LMA is a method for describing varieties of movement and includes Body (which body parts are moving/being influenced), Effort (characteristics about the way a movement is done with respect to inner intention), Shape (the way the body changes shape during movement), and Space (motion in connection with the environment). Overall, the dance intervention applied a positive focus, aimed to strengthen the girls’ individual resources, which has support in the literature \(^{200, 251}\). Optimism has been shown to influence mental health \(^{105}\).

To facilitate further leisure-time activity participation after the intervention had ended, the dance class also aimed to be somewhat similar to existing classes in dance-schools and gyms.

The development of the dance class shared some common ground with basic body awareness therapy (BBAT), which is a physiotherapeutic treatment method that is commonly used in Swedish psychiatry \(^{168}\). This method addresses the interactions between the body and mind by focusing on enhanced awareness and quality of movement \(^{165}\). The increased body awareness in BBAT is assumed to increase awareness of the self, opening new possibilities for interacting with other people. However, in addition to awareness of movement, BBAT also involves meditation, the use of very simple, slow movements, and a pronounced focus on verbalizing and sharing experiences \(^{70}\); which is not consistent with the current dance intervention.

In the current dance intervention, the role of the dance instructor was:

- To guide with authority and provide a non-judgmental atmosphere that encourages the girls to reduce their focus on performance.
- To support group development and facilitate new friendship bounds.
- To facilitate interaction for girls in need of extra support.
- To gradually introduce new and more advanced choreography, always adjusting it to the level of the participants’ skills to ensure feelings of success.
- To encourage the girls to bring their own music and listen to their suggestions.
- To support the girls’ intrinsic motivation by using informational verbal rewards, rather than controlling (in line with cognitive evaluation theory 74).
- To be responsive to day-to-day dynamic needs of the specific group.
- To encourage the girls to pay attention to their bodily movements, “become part of the movement” with curiosity.
- To register attendance at every dance class during the intervention period and to receive and answer cancellations made by text message to the instructor.
- To report adverse events to the school nurse and parents.

The room had mirrors along one wall. At the beginning of the intervention time-period, a warm-up was always performed in a circle, turned away from the mirrors. This was an intentional choice to prevent timidity and uncertainty among the girls. However, during the dance choreography practice, we turned towards the mirrors to decrease stigma and play down the effects of the mirrors. Additionally, all instructors encouraged the girls to use the mirrors to enhance the group feeling and the visualized esthetic aspect of dance because it is possible to capture the whole group moving together by glimpsing the mirror.

After each term, the girls were allowed to express their opinions and give suggestions for the next term via written evaluations. At the end of the intervention, the participants were presented with a number of alternatives to continue their dancing or to engage in another physical or cultural activity elsewhere. Visits to several local dance schools (and gyms with group training) were conducted.

**Data Collection**

Data were collected using a questionnaire that was administered regularly, as previously described in Table 2. The results of papers I and II are based on data from the baseline and follow-ups performed 8, 12, and 20 months after the baseline. The results of paper IV are based on the same data and 4 months of follow-up. The questionnaire sessions occurred at the university hospital, and at least three members of the project team were always present to provide assistance and answer questions if needed. From among the abundant data collected in this study, a limited number of areas have been chosen for presentation within this thesis, all of which are in accordance with the original research plan. In the following section, the interview data-collection methods used in this work are described.
**Questionnaire Measures**

The questionnaire contained 120 questions about physical and mental health, school, friends, leisure time, interests, exercise habits, and rated experience in dance. The full questionnaire is presented in Appendix 1. The validity and reliability of the measures is described below. The validity is defined as “the degree to which evidence and theory support the interpretations of test scores entailed by the proposed uses of tests”. The reliability reflects the number of errors associated with the assessment scale and “the consistency of measures when the measurement procedure is repeated in a group of individuals with all things being equal.”

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>120 questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Rated Health (SRH)*</td>
<td>1</td>
</tr>
<tr>
<td>Life and Health Young People (Survey)*</td>
<td>31</td>
</tr>
<tr>
<td>Sense of Coherence (SOC)</td>
<td>13</td>
</tr>
<tr>
<td>Health Utility Index Mark 3 (HUI3) *</td>
<td>3</td>
</tr>
<tr>
<td>Physical Activity Enjoyment Scale (PACES)</td>
<td>16</td>
</tr>
<tr>
<td>Centre for Epidemiological Studies Depression Scale for Children (CES-DC) *</td>
<td>20</td>
</tr>
<tr>
<td>Stress In Children (SiC)</td>
<td>21</td>
</tr>
<tr>
<td>Additional Questions:</td>
<td>15</td>
</tr>
<tr>
<td>- Menstrual onset, contraceptives, and related mood changes</td>
<td></td>
</tr>
<tr>
<td>- Overall experience of the dance classes *</td>
<td></td>
</tr>
<tr>
<td>- Number of visits to school health care* or other health care (last semester)</td>
<td></td>
</tr>
<tr>
<td>- Leisure-time activities (last semester) *</td>
<td></td>
</tr>
</tbody>
</table>

*Included in this thesis

**Self-Rated Health (SRH)**
The SRH is typically measured using the single-item question, “How do you rate your general health?” with the following responses: 1, very poor; 2, poor; 3, neither good nor poor; 4, good; and 5, very good. This response has proven to be a strong predictor of physical health status in adolescents 268 and has been tested for validity and reliability 45. The SRH is the individuals’ perception and evaluation of his or her health and includes general health, well-being, perceptions of symptoms, and vulnera-
Several studies have shown that the SRH is a strong predictor for early morbidity and mortality, and this question is widespread and frequently used in national and international surveys. A single-item question such as the SRH is regarded as simple and direct and assesses unknown perceptions, values and preferences related to respondent health status in a unique manner.

**Adherence to dance classes**
Participation at an individual level was recorded by the dance instructor at each session. The 8-month intervention included 48 dance intervention sessions.

**Overall experience of the intervention**
The overall intervention experience was measured with a graphic rating scale in the form of a modified Visual Analogue Scale with five discrete alternatives below the line. This scale has been shown to be superior to the standard Visual Analogue Scale in terms of both consistency and stability. The question was, “How do you experience dancing while you perform it?” The rating scale started at “entirely negative” and ended at “entirely positive.”

**Survey: “Life and Health -Young People”**
Many of the questions used in our questionnaire originated from “Life and Health -Young People”, a survey that is conducted every other year in the Örebro region, involving over 8,000 adolescents (13, 15 and 17 years old) with a response rate of approximately 80%. These questions concerned socio-economic status, leisure time, sleep, relations, and school. Unfortunately, validation of this instrument is scarce, although it is well-used in several other Swedish counties that conduct Life and Health Young People surveys with similar questions.

In paper II, we report the results relating to somatic symptoms, emotional distress, and use of medication based on this survey.

**Somatic Symptoms.** Participants rated the frequency with which they had experienced various somatic symptoms during the past 3 months on a 5-point scale (1 = never, 2 = infrequently, 3 = sometimes, 4 = frequently, and 5 = always). The six items used for this measure captured headaches, stomachaches, vertigo, tiredness, aching shoulders, and backaches.

**Emotional Distress.** In response to the question “How often during the past 3 months have you experienced any of the following emotions?” par-
Participants rated the frequency of the various emotions (1 = never, 2 = infrequently, 3 = sometimes, 4 = frequently, and 5 = always) for each of six items referring to stress, nervousness, anxiety, sadness, irritation, and powerlessness.

Use of Medication. As a follow-up-question to the described somatic symptoms, the participants noted how often they used medication, i.e., analgesics, such as paracetamol (acetaminophen) or non-steroidal anti-inflammatory drugs (NSAIDs), including ibuprofen, for these problems and how much medication they used for each symptom.

The responses at the 8-, 12-, and 20-month follow-ups were compared with baseline data and described and coded as 1 = increased consumption, 0 = unchanged (exactly the same as at baseline), and -1 = decreased consumption. No distinction or ranking was made between various analgesics.

Health Utility Index Mark 3 (HUI 3)
The HUI3 was used for the health economic evaluation. This is a generic preference-based system for measuring comprehensive health status and health-related quality of life (HRQL) that can be used from the age of five. It was developed using the preferences of a random sample of respondents who were 16 years of age and older and has also been used to measure the health status of children in several studies. The HUI3 can provide an HRQL score for overall health that can be used to calculate the QALYs. To provide an overall HRQL score in this paper, we included the three following dimensions: pain, emotion and cognition. Other dimensions that were not applicable in this paper are vision, hearing, speech, ambulation/mobility, dexterity, and self-care (hygiene).

The HUI3 scoring functions are based on preference measurements from random samples of the general population, and they represent mean community utilities. The utility scores have interval-scale properties. Overall HRQL scores were computed using the conventional scale from dead = 0.00 to perfect health = 1.00 and are therefore appropriate for calculating QALYs in cost-utility analyses (CUAs). A difference of 0.03 or more in HUI3 scores of HRQL is clearly clinically important.

The questions for each dimension used in the questionnaire were as follows:


**Pain** Question: Which description best fits your pain and/or discomfort? Possible answers: 1. Free of pain and discomfort. 2. Mild to moderate pain
that prevents no activities. 3. Moderate pain that prevents a few activities. 4. Moderate to severe pain that prevents some activities. 5. Severe pain that prevents most activities.

**Cognition**

Question: How would you describe your perception? Possible answers: 1. Able to remember most things, think clearly and solve day-to-day problems. 2. Able to remember most things, but have a little difficulty when trying to think and solve day-to-day problems. 3. Somewhat forgetful, but able to think clearly and solve day-to-day problems. 4. Somewhat forgetful, and have a little difficulty when trying to think or solve day-to-day problems. 5. Very forgetful, and have great difficulty when trying to think or solve day-to-day problems. 6. Unable to remember anything at all, and unable to think or solve day-to-day problems.

**Number of Visits**

The number of visits to school health care during the previous semester was reported by the girls in the study. See Appendix.

**Centre for Epidemiological Studies Depression Scale for Children (CES-DC)**

In this study, the CES-DC was measured to screen which of the girls might need further consultation or support. The CES-DC measures the behavioral and cognitive components of depression. A total of 20 different items, such as “I felt sad,” is rated on a 4-point scale. Each response to an item is scored 0 = not at all, 1 = a little, 2 = some and 3 = a lot. The possible score sums range from 0 to 60. Higher CES-DC scores indicate higher levels of depression; a cut-off point of 16 is considered optimal for identifying depressive disorders. When Swedish adolescents were screened in a study, this cut-off point was surpassed by one third of the adolescents, and a cut-off point of 30 has been suggested as more appropriate for this population.

Compared with the more established Beck Depression Inventory (BDI), the CES-DC was equally effective at detecting depressive symptoms. The CES-DC has been shown to be a reliable and valid measure for screening for elevated risks of depression in children and adolescents who are 12–18 years old.

**Leisure-time Activities**

Data on the girls' leisure-time activities were collected with the following questions formulated by the research team: “What leisure activities have you been engaging in during the last semester?” and “How many times a week?”
To be reported elsewhere
The questions in the questionnaire (see Appendix) that will be evaluated in forthcoming papers and reported elsewhere are as follows: PACES, SOC, SiC, time-point of menstrual onset, contraceptives, related mood changes, and more questions from Life and Health Young People.

Interviews
A strategic sample of the girls was interviewed approximately 1 week after the dance intervention had ended (Table 5).

Table 5. Strategic Sample of Girls Chosen for Interview.

| Age | Ranged from 14-19 years (mean 16.5 years old) |
| School | From 9 different schools in the region |
| Participation | Ranged from 45 % to 94 % |
| Inclusion year | From year one: 15 girls; from year two: 9 girls |
| PA and dance habits before start of intervention | Ranged from never participated in any PA before, to being used to regular PA and dance |
| Family background | A mixture of different family backgrounds: divorced parents/living with both parents/living with only the mother/parents with psychiatric diagnosis/disorders |
| Born in Sweden | Born in Sweden: 20 (83 %), born outside Sweden: 4 (17 %). |

Face-to-face semi-structured interviews were used, and all were conducted by the first author (AD) for internal consistency. The interviews started with the provision of information about the interview purpose and a short informal conversation to make the girls feel comfortable in the interview situation. The interviews were based on open-ended questions from the interview guide (Table 6), and participants were encouraged to speak freely about their experiences during the dance intervention. Follow-up questions (e.g., “Could you tell me more?”) were sometimes posed, as recommended to obtain richer material.
Table 6. Interview Guide.

**Primary Questions**

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Why did you participate in the dance project?</td>
</tr>
<tr>
<td>Tell me about your thoughts about participating, before you started.</td>
</tr>
<tr>
<td>Tell me about your experience of participating in the dance intervention.</td>
</tr>
<tr>
<td>What did you like most/least about the dance practice?</td>
</tr>
<tr>
<td>How does your body feel when you dance? Has it changed? How?</td>
</tr>
<tr>
<td>How does it feel when you are on your way to the dance class?</td>
</tr>
<tr>
<td>How does it feel when you are on your way from the dance class?</td>
</tr>
<tr>
<td>How does it feel to be in a group?</td>
</tr>
<tr>
<td>Is there anything you have learned about yourself during the dance intervention this year?</td>
</tr>
<tr>
<td>In what way has participation in the dance project affected your daily life?</td>
</tr>
<tr>
<td>Is there something more that you want to tell me?</td>
</tr>
</tbody>
</table>
Data Analysis
In papers I, II and IV, all the analyses were performed using the IBM Statistical Package for the Social Sciences 21 (IBM SPSS, IBM Corp, Armonk, NY). All significance tests were two-sided and conducted with a 0.05 significance level. Overall, the data were analyzed according to the Intention To Treat (ITT) principle (the participants remained in their original study group).

Paper I
The differences between groups in the SRH were analyzed by independent-samples t tests. The change score was analyzed using paired observations. Linear regression analysis was also performed to study the effect of the SRH baseline values on the change score. Individual adherence to the 48 dance classes was calculated as described in the results section. The overall rated experience on the graphic rating scale ranged from entirely negative to entirely positive, and the cut-off was set between neutral and mostly positive.

Paper II
The outcome variables were measured at the baseline and at 8 months, 12 months, and 20 months after the baseline. The effects of the intervention were evaluated by calculating the change scores from the baseline to each follow-up. These change scores constitute the actual dependent variables used in each of the separate independent-samples t tests used to compare the control and intervention groups. Of the 112 participants, 77% completed data for all the outcome variables in terms of somatic symptoms and emotional distress. Data coverage for each primary variable dyad was used as a basis for calculating the changes in the dependent variables. To calculate the correlation coefficient at the baseline between somatic symptoms and emotional distress, a Pearson correlation was used. A MI (fully conditional specification) procedure was used to estimate the missing values for the somatic symptoms and emotional distress variables. MI is regarded as one of the best practices for handling missing values when the missingness exceeds 10%.

The imputation model (using five imputations) included all three measurement time points for both of the primary outcome variables as well as the grouping variable. Littles test of MCAR showed that the pattern of
internal attrition did not differ from data missing completely at random, $\chi^2 (N= 112, df=35) =37.62, p=0.35$.

For use of medication, a comparison within groups was performed first using the Sign test. Second, for comparisons between groups, the Mantel-Haenszel Chi Square test for ordered and categorical variables was used.

**Paper III**

Interviews were conducted and analyzed by qualitative inductive content analysis as in Elo & Kyngäs, 2008. The verbatim transcription of the interviews was made by an experienced secretary. Each interview was read through by all the authors during the preparation phase. Notes regarding aspects of the content were written down in the margin of the text while reading it repeatedly. The data were then analyzed using the NVIVO 10 software program.

Statements in accordance with the aim were identified and coded in open coding. The first author (AD) generated codes and identified sub-categories. All of the authors (AD, MM, and HS) then met to discuss the coding and generated the categories. After this process, a coding process was agreed upon, and AD coded the remaining interviews. The meaning units relevant to the aim were extracted, and the core of the content was condensed to codes. These codes were interpreted, sorted and grouped into 20 sub-categories, which were intended to reflect the core message of the interviews. To ensure that the content was understood correctly, the process involved going back and forth between the different steps, and AD and HS discussed the coding in an item-by-item fashion to ensure consistency. The sub-categories were then sorted into 5 generic categories. These categories are intended to be descriptive and to provide a useful and accurate picture of the text units. Finally, a primary category was developed through abstraction. All of the authors checked for the accuracy of the translations and interpretations of the presented quotes. An example of the meaning unit to generic category process is described in Table 7.
Table 7. Example of the Process of the Analysis; Moving From the Text (Meaning Unit) to Codes, Sub-Categories and Generic Categories.

<table>
<thead>
<tr>
<th>Meaning units</th>
<th>Codes</th>
<th>Sub-categories</th>
<th>Generic categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Because, you know, everywhere in our society it’s all about grades or credits, and stuff, and it’s so nice to go to dance. Because there you can let go of everything else and, like, just be.” /S</td>
<td>Dance offers an oasis from grades and external pressure</td>
<td>An oasis from grades and external pressure</td>
<td>An oasis from stress</td>
</tr>
<tr>
<td>“That, I mean, there’s been such high demands at school sometimes ... And then, when you dance like this in your free time, there are no demands at all — it’s really nice.” /K1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>“And that it’s much better, I mean, it’s a way worse feeling when you know that you’re always being judged. You know that someone is standing and watching you and is going to, like, rate you.” /S1</td>
<td>It is a horrible feeling to be judged, and to be watched and rated</td>
<td>The importance of a non-judgmental zone</td>
<td></td>
</tr>
<tr>
<td>“Well, it’s great that you’ve done this, but you could be even better and now you have to do this even better.’ Yeah, basically everything is about achieving. [...] That’s why it’s so nice to enter a dance studio where achievement just isn’t that important.” /T1</td>
<td>You can always do better and achieve more. Dance serves as a contrast to the achievement-oriented environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“When you do a dance you can experience those feelings for yourself.” /A3</td>
<td>Dance embodies emotions</td>
<td>Use dance to identify and communicate emotions</td>
<td>Dance as emotional expression</td>
</tr>
<tr>
<td>“There’s a feeling you have, and when you then take some (dance) steps you know — you think, ‘Well, this is something I can really relate to!’ — You heighten the feeling and really show it.” /M1</td>
<td>Embraces dance moves that she can emotionally relate to</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
An economic evaluation was performed as a cost-utility analysis (CUA) from a societal perspective. CUA is the most preferred health economic method in Sweden \(^{242, 252}\) and it is also a preferred approach for stakeholders over other common models \(^{81}\). The results are expressed in terms of cost per QALY gained by undertaking one intervention instead of another. QALYs are a measure of health. A quality-adjustment weight for each health state is multiplied by the time spent in the state, and the resulting values are summed to give the number of QALYs. One year of perfect health represents 1 QALY. The health related quality of life (HRQOL) is measured on a scale from 0 to 1 \(^{81}\).

For example; if an intervention increases the QOL from 0.6 to 0.7 over five years, the total QALY gain will be 0.5 (5 x 0.1). This gain is then compared with the costs. The results are presented as a quote between difference in costs and the difference in health, incremental cost effectiveness ratio (ICER).

In Sweden, the National Board of Health and Welfare has specified four intervals to estimate cost effectiveness. An ICER under 100,000 Swedish krona (SEK) is estimated as low, whereas those between 100,000 and 500,000 SEK are moderate. ICER values exceeding 500 000 SEK are high, and one above 1000 000 SEK is very high \(^{236}\).

In this study, the intervention plus the usual school health services was compared with the usual school health services alone. The measured time period was 20 months, and the health effects and savings beyond 12 months were discounted by 3 %. The following were analyzed: (1) the costs for the intervention stakeholder, (2) the health effects, and (3) the health care savings.

(1) The cost estimates considered here were the costs of the dance classes (including the dance instructor’s salary, dance studio rental, and equipment) and the cost of using selected healthcare resources, i.e., visits to school nurses (self-reported values). The number of visits was compared with the baseline value at all follow-ups. All cost estimates, including overhead costs, were converted from SEK to US dollars (USD) using an approximate exchange rate of 1 SEK = 0.15 USD. The prices are valid for 2011.

(2) The health effect in gained QALYs was measured with the HUI3. Data were analyzed according to the ITT principle. Analyses of the effect size within each group were performed using paired-
samples t-tests. Differences between the groups were analyzed with independent-samples t-tests.

(3) The cost for each visit to the school nurse was calculated based on the average salary of a school nurse (social fees included) and overhead costs (including room and equipment rentals). For healthcare savings, the individual values of QALY gains and the costs of the intervention and control groups were used.

If data were missing the last observation carried forward (LOCF) approach was used \(^{169, 270}\), which implies that the last value observed is imputed.

Sensitivity analyses were conducted. The cost effectiveness was calculated without savings, with 50% higher costs and with 50% reduced effects on the QALYs. In the analysis, this uncertainty is also handled via the net monetary benefit (NMB) method \(^{250, 267}\); we repeated the NMB estimation with two different amounts for the cost of a gained QALY. The amount of money that decision makers are willing to pay for a gain in QALY is considered. When all the data are expressed in terms of money, it is possible to calculate the likelihood that an intervention is cost-effective in relation to a competing intervention.
ETHICAL CONSIDERATIONS

The girls participated voluntarily and were informed that if they chose to terminate their participation in the study, they would not have to explain their reasons. School health care was available for all students during the entire study period when needed, as usual. The participants in the control and intervention groups who were found to be at risk for severe depression at any of the follow-ups, as indicated by a score of ≥34 points on the CES-DC \cite{94,195}, participated in a supporting conversation and a diagnostic interview with a psychologist and/or psychiatrist. The research team contacted all the girls who scored ≥34 points on the CES-DC to offer this meeting, and they also spoke with the girls’ parents/guardians if she allowed them to do so (for those <15 years old, the parents/guardians were contacted regardless of approval). The psychologist/psychiatrist used the M.I.N.I. KID interview guide \cite{225} to evaluate the need for extended or additional support. Girls requiring further support (including those with suicidal thoughts) were referred directly to CAP. The school nurses could be contacted if needed, and the senior physician of the school health care had medical responsibility for the participants.

The possible risk of stigmatization was discussed. Thus, the dance intervention was designed to be similar to a normal PA; for example, a location that is also used for dance (central gym) was selected, and the design of the dance class was somewhat similar to that of other courses. This study was conducted in a way that was consistent with the philosophy of the international Ethical Research Involving Children (ERIC) \cite{91}, with respect for the dignity, well-being and rights of all children, irrespective of context. The Regional Ethical Review Board in Uppsala, Sweden, approved the study (2008/134).
RESULTS

Main Findings
The main findings were that this dance intervention for adolescent girls with internalizing problems gave increased self-rated health, decreased somatic symptoms, emotional distress and use of medication, increased feelings of self-trust, and were considered cost-effective. The intervention also played a role in sustaining new PA habits, including dance.

Photo: Magnus Westerborn
Baseline Characteristics
The baseline characteristics of the 112 participants were well balanced in most variables (Table 8).

Table 8. The Baseline Characteristics, Mean Values (%), p-values.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention group (n = 59)</th>
<th>Control group (n = 53)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)</td>
<td>n (%)</td>
<td></td>
</tr>
<tr>
<td>Age 13-14 years</td>
<td>11 (19 %)</td>
<td>13 (25 %)</td>
<td>.70</td>
</tr>
<tr>
<td>Age 15-16 years</td>
<td>27 (46 %)</td>
<td>23 (43 %)</td>
<td>.29</td>
</tr>
<tr>
<td>Age 17-18 years</td>
<td>21 (35 %)</td>
<td>17 (32 %)</td>
<td>.27</td>
</tr>
<tr>
<td>Born in Sweden</td>
<td>55 (93 %)</td>
<td>49 (93 %)</td>
<td>.88</td>
</tr>
<tr>
<td>Live with both parents</td>
<td>24 (41 %)</td>
<td>30 (57 %)</td>
<td>.031</td>
</tr>
<tr>
<td>Mother on sick leave</td>
<td>6 (10 %)</td>
<td>6 (11 %)</td>
<td>.85</td>
</tr>
<tr>
<td>Father on sick leave</td>
<td>3 (5 %)</td>
<td>3 (6 %)</td>
<td>.88</td>
</tr>
<tr>
<td>Participated in dance before start of study</td>
<td>33 (56 %)</td>
<td>36 (68 %)</td>
<td>.20</td>
</tr>
<tr>
<td>Rate their health as poor or very poor</td>
<td>8 (14 %)</td>
<td>3 (6 %)</td>
<td>.16</td>
</tr>
<tr>
<td>Use of Medication b</td>
<td></td>
<td></td>
<td>.85</td>
</tr>
<tr>
<td>Every day</td>
<td>8 (14 %)</td>
<td>10 (19 %)</td>
<td></td>
</tr>
<tr>
<td>4-6 days/week</td>
<td>4 (7 %)</td>
<td>4 (8 %)</td>
<td></td>
</tr>
<tr>
<td>2-3 days/week</td>
<td>6 (10 %)</td>
<td>9 (17 %)</td>
<td></td>
</tr>
<tr>
<td>One day/week</td>
<td>3 (5 %)</td>
<td>2 (4 %)</td>
<td></td>
</tr>
<tr>
<td>1-3 days/month</td>
<td>13 (22 %)</td>
<td>4 (8 %)</td>
<td></td>
</tr>
<tr>
<td>Less than 1 day/month</td>
<td>2 (3 %)</td>
<td>0 (0 %)</td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>19 (32 %)</td>
<td>17 (32 %)</td>
<td></td>
</tr>
<tr>
<td>Health Related Quality of life</td>
<td></td>
<td></td>
<td>.081</td>
</tr>
<tr>
<td>Number of visits to school nurse last term</td>
<td></td>
<td></td>
<td>.47</td>
</tr>
</tbody>
</table>

\(^{a}\) Mean for both intervention group and control group: 16 years.

\(^{b}\) In this variable, data are missing for 4 participants (7 %) in the intervention group, and for 7 participants (13 %) in the control group.

\(^{c}\) Measured with Health Utility Index Mark 3, scores: dead = 0.00 to perfect health = 1.00 scale.
The Study Group compared with the “Life and Health Young People” Sample
Overall, the current study group rated themselves as having more somatic symptoms (higher rates) at the baseline and fewer instances of feeling of energetic or happy and relaxed (lower rates) than the 9th grade girls in the “Life and Health Young People 2007” survey of the Örebro region (Table 9).

Table 9. Data from in 9th grade Girls in the “Life and Health Young People” 2007 survey Compared with Baseline Data from the Current Study. Mean Values (Standard Deviation)/n. The scale for the variables ranged from 1-5 (1=never, 5=always). For SRH, the scale ranged from 1-5 (1=very bad, 5= very good).

<table>
<thead>
<tr>
<th></th>
<th>9th grade Girls, “Life &amp; Health Young People” sample Mean value (SD)/ N</th>
<th>“Dance project” sample Baseline Mean value (SD)/ n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headache</td>
<td>2.80 (.967) / 1541</td>
<td>3.35 (.931) / 111</td>
</tr>
<tr>
<td>Stomach ache</td>
<td>2.69 (.929) / 1521</td>
<td>3.06 (1.012) / 111</td>
</tr>
<tr>
<td>Tiredness</td>
<td>3.52 (.925) / 1545</td>
<td>3.90 (.884) / 111</td>
</tr>
<tr>
<td>Ache in shoulders</td>
<td>2.51 (1.173) / 1533</td>
<td>3.07 (1.211) / 111</td>
</tr>
<tr>
<td>Stress</td>
<td>3.27 (.981) / 1560</td>
<td>3.67 (.821) / 112</td>
</tr>
<tr>
<td>Nervousness</td>
<td>2.81 (.876) / 1556</td>
<td>2.90 (.968) / 112</td>
</tr>
<tr>
<td>Anxiety</td>
<td>2.53 (1.054) / 1547</td>
<td>2.97 (.977) / 112</td>
</tr>
<tr>
<td>Sadness</td>
<td>2.60 (1.059) / 1538</td>
<td>2.83 (.919) / 112</td>
</tr>
<tr>
<td>Irritated</td>
<td>2.89 (.865) / 1553</td>
<td>3.00 (.894) / 111</td>
</tr>
<tr>
<td>Happy</td>
<td>3.46 (.955) / 1542</td>
<td>3.26 (.857) / 112</td>
</tr>
<tr>
<td>Energy</td>
<td>3.31 (.872) / 1545</td>
<td>3.02 (1.013) / 112</td>
</tr>
<tr>
<td>Relaxed and calm</td>
<td>3.02 (.912) / 1545</td>
<td>2.68 (.906) / 111</td>
</tr>
<tr>
<td>Powerlessness</td>
<td>2.35 (1.049) / 1536</td>
<td>2.54 (.985) / 112</td>
</tr>
<tr>
<td>-SRH</td>
<td>3.03 (.883) / 1557</td>
<td>3.53 (.837) / 108</td>
</tr>
<tr>
<td>-Body Mass Index (BMI)*</td>
<td>20.9 (3.02) / 1412</td>
<td>21.6 (3.111) / 111</td>
</tr>
</tbody>
</table>

* For girls who are 16 years old, a BMI over 24.37 is considered overweight 60.

Depressive symptoms in the study group compared with the Swedish sample
After each follow-up, the CES-DC was calculated (max 60), and as described above, the girls whose scores ≥ 34 were provided a consultation with an experienced psychologist. Among the whole group, this was the case for 17 % at baseline, 11 % at the 8-month follow-up, 10 % at the 12-month follow-up, and 11 % at the 20-month follow-up.
None of the girls were advised to terminate their participation in the intervention. No suicidal risk was assessed; however, two girls were referred to CAP for further consultation.
At a population level, the CES-DC mean score for girls in Sweden who are 16-17 years old is 16.5. This score is lower than the baseline mean values for the current study group of 26.1 (mean standard error = 1.278) for the intervention group and 24.3 (mean standard error = 1.214) for the control group. Olsson et al. highlighted that 44.4% of the girls scored 16 or above and that 15.7% scored 30 or above. The data for these cut-off-scores and the cut-off score of 34 used at each follow-up in this study are presented in Table 10.

Table 10. Cutoff Scores at ≥16, ≥30 and ≥34 in the Intervention and Control Groups According to the CES-DC.

<table>
<thead>
<tr>
<th></th>
<th>CES-DC ≥16</th>
<th></th>
<th>CES-DC ≥30</th>
<th></th>
<th>CES-DC ≥34</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Interv.</td>
<td>Control</td>
<td>Interv.</td>
<td>Control</td>
<td>Interv.</td>
</tr>
<tr>
<td></td>
<td>Group</td>
<td>group</td>
<td>Group</td>
<td>group</td>
<td>Group</td>
</tr>
<tr>
<td>BL a</td>
<td>48 (83 %)</td>
<td>43 (84 %)</td>
<td>19 (33 %)</td>
<td>13 (25 %)</td>
<td>9 (16 %)</td>
</tr>
<tr>
<td>8 m b</td>
<td>35 (60 %)</td>
<td>31 (61 %)</td>
<td>7 (12 %)</td>
<td>10 (20 %)</td>
<td>4 (7 %)</td>
</tr>
<tr>
<td>12 m c</td>
<td>28 (57 %)</td>
<td>27 (56 %)</td>
<td>13 (27 %)</td>
<td>7 (15 %)</td>
<td>6 (12 %)</td>
</tr>
<tr>
<td>20 m d</td>
<td>26 (53 %)</td>
<td>29 (69 %)</td>
<td>8 (16 %)</td>
<td>8 (19 %)</td>
<td>5 (10 %)</td>
</tr>
</tbody>
</table>

a) n= Intervention group: 58, Control group: 51.
b) n= Intervention group: 58, Control group: 51.
c) n= Intervention group: 49, Control group: 48.
d) n= Intervention group: 49, Control group: 42.

**Self-Rated Health**

The SRH of the dance intervention group was more improved than that of the control group at all follow-ups (Table 11). The difference in the mean change was 0.30 (95 % CI, -0.01 to 0.61) at 8 months, 0.62 (95 % CI, 0.25 to 0.99) at 12 months, and 0.40 (95 % CI, 0.04 to 0.77) at 20 months. The ITT approach was applied, and the girls who dropped out of the dance intervention (11) were still included in the dance group in the analyses.

Because of the differences in the SRH at the baseline, a linear regression that also included baseline values was conducted. This analysis, which utilized the study group and the baseline SRH as independent variables, revealed an association between the study group and SRH changes of 0.082 at 8 months (p = .27), 0.204 at 12 months (p = .02), and 0.076 at 20 months (p = .38).
Table 11. SRH at Baseline (BL) and at the 8, 12, and 20 Month Follow-ups and the Mean Change Score Relative to the Baseline.

<table>
<thead>
<tr>
<th>SRH</th>
<th>Baseline (n = 59)</th>
<th>8 mo&lt;sup&gt;a&lt;/sup&gt; (n = 50)</th>
<th>12 mo&lt;sup&gt;c&lt;/sup&gt; (n = 49)</th>
<th>20 mo&lt;sup&gt;d&lt;/sup&gt; (n = 50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRH score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2 (3)</td>
<td>0</td>
<td>1 (2)</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>6 (10)</td>
<td>1 (2)</td>
<td>0</td>
<td>2 (4)</td>
</tr>
<tr>
<td>3</td>
<td>26 (44)</td>
<td>8 (16)</td>
<td>5 (10)</td>
<td>5 (10)</td>
</tr>
<tr>
<td>4</td>
<td>21 (36)</td>
<td>29 (58)</td>
<td>24 (49)</td>
<td>32 (64)</td>
</tr>
<tr>
<td>5</td>
<td>4 (7)</td>
<td>12 (24)</td>
<td>19 (39)</td>
<td>11 (22)</td>
</tr>
</tbody>
</table>

**Mean (SD) score**
- Dance intervention group: 3.32 (0.880)
- Control group: 3.75 (0.731)

**Mean change score, paired (95% CI)**
- Dance intervention group: 0.58 (0.32 to 0.84) to 0.82 (0.54 to 1.10)
- Control group: 0.28 (0.11 to 0.45) to 0.26 (0.004 to 0.51)

**Difference in mean change score (95% CI)**
- Dance intervention group: 0.30 (−0.01 to 0.61)
- Control group: 0.62 (0.25 to 0.99)

<sup>a</sup>The SRH scores were as follows: 1 indicates very poor; 2, poor, 3, neither good nor poor; 4, good; and 5, very good.

<sup>b</sup>The mean SRH score for missing subjects was 2.56 for the dance intervention group and 3.33 for the control group.

<sup>c</sup>The mean SRH score for missing subjects was 2.90 for the dance intervention group and 3.43 for the control group.

<sup>d</sup>The mean SRH score for missing subjects was 3.00 for the dance intervention group and 3.50 for the control group.

These SRH results are also illustrated in a table and figure below.

Table 12. Decreased (-), Unchanged (0) or Increased (+) SRH at and at the 8, 12, and 20 Month Follow-ups.

<table>
<thead>
<tr>
<th></th>
<th>Intervention group</th>
<th>Control group</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>8 months</td>
<td>4 %</td>
<td>43 %</td>
</tr>
<tr>
<td>12 months</td>
<td>4 %</td>
<td>30 %</td>
</tr>
<tr>
<td>20 months</td>
<td>4 %</td>
<td>40 %</td>
</tr>
</tbody>
</table>
Figure 2. Distribution of Participants’ SRH at Baseline and at 8, 12 and 20-Month Follow-ups.
Adherence to the Intervention

A total of 59 girls were randomized to the intervention group, of which 11 dropped out, and 48 girls remained. The dance classes were given 48 times during the 8-month period. Participation is presented in Table 13, and an analysis of the associations between participation during the 8-month time period in the intervention and outcome variables are presented in Table 14. Of the 11 girls who dropped out, 10 reported that they left because of scheduling conflicts between the dance class and their school curriculum, and 1 girl reported that dance did not suit her interests.

Table 13. Participation in the 48 Dance Classes; Per Protocol and ITT.

<table>
<thead>
<tr>
<th>Attendance (%)</th>
<th>Per Protocol Girls attending dance (n=48)</th>
<th>ITT Including drop outs (n=59)</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100 %</td>
<td>13 % (n=6)</td>
<td>10 % (n=6)</td>
</tr>
<tr>
<td>50-89 %</td>
<td>54 % (n=26)</td>
<td>44 % (n=26)</td>
</tr>
<tr>
<td>10-49 %</td>
<td>33 % (n=16)</td>
<td>27 % (n=16)</td>
</tr>
<tr>
<td>0-9 %</td>
<td>0 % (n=0)</td>
<td>19 % (n=11)</td>
</tr>
</tbody>
</table>

Table 14. Bivariate correlations (Pearson Correlation) and p-value between Total Adherence and Self-rated health, Somatic Symptoms, Emotional distress and Depressive Symptoms in the Intervention Group, at Baseline (BL) and at the 8 Months (8 m) Follow up.

<table>
<thead>
<tr>
<th>Participation in total</th>
<th>Pearson Correlation p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRH at BL (n=59)</td>
<td>-0.247 p = .059</td>
</tr>
<tr>
<td>SRH at 8 m. (n=50)</td>
<td>-0.304 p = .032</td>
</tr>
<tr>
<td>Somatic Symptoms at BL (n=58)</td>
<td>-0.392 p = .002</td>
</tr>
<tr>
<td>Somatic Symptoms at 8 m. (n=50)</td>
<td>-0.338 p = .016</td>
</tr>
<tr>
<td>Emotional Distress at BL (n=59)</td>
<td>-0.042 p = .752</td>
</tr>
<tr>
<td>Emotional Distress at 8 m. (n=50)</td>
<td>-0.134 p = .353</td>
</tr>
<tr>
<td>CES-DC at BL (n=59)</td>
<td>-0.284 p = .030</td>
</tr>
<tr>
<td>CES-DC at 8 m. (n=50)</td>
<td>-0.316 p = .025</td>
</tr>
</tbody>
</table>
Out of all the somatic symptoms, migraines were shown to have the strongest influence on participation (Pearson correlation -0.307, p-value 0.032). As seen in Table 14, SRH, somatic symptoms and depressive symptoms were associated with the participation level. More problems resulted in lower participation. However, emotional distress did not exhibit an association, suggesting that increased emotional distress does not affect or prevent participation in the dance intervention.

**Overall Experience of the Intervention**

At the 8-month follow-up, immediately after the end of the intervention, the remaining 48 girls rated their experience of the intervention, and 47 answered the question. Out of all the answers, 43 girls (91.5 %) rated the intervention as a positive experience, 3 girls (6.5 %) rated it as neutral, and one girl (2 %) described it as negative.

The graphic rating scale had a possible range of 0-67, and higher values indicated more positive experiences. For the current sample, for the girls included in the dance intervention group, the lowest rating was 19 (one girl), and the highest rating was 67 (12 girls). ITT was applied, and the mean value was 56.7, and the median was 62. Notably, the girl who indicated the lowest value (rated the dance as negative) did not attend the dance classes more than five times because she moved to another town but remained in the study.

**Somatic Symptoms and Emotional Distress**

**Somatic symptoms:** Participants rated the frequency at which they experienced headaches, stomachaches, vertigo, tiredness, aching shoulders, and backaches during the past 3 months. The mean values (and SDs) for somatic symptoms (pooled together) across the four time points are presented in Table 15. The effects of the intervention on somatic symptoms were also investigated by comparing the change scores between the groups. At the 8-month follow-up, no significant difference between the groups was found regarding somatic symptoms (p = 0.30). At 12 months, a significant effect was noted: The intervention group reported a greater decrease in symptoms than the control group (p = 0.021). At 20 months, the change score did not differ significantly between the groups (p = 0.72).
Table 15. Mean Score (and Standard Deviations) for Somatic Symptoms at Baseline and at 8, 12, and 20 months’ Follow-Up, as well as Mean Change Score Compared to Baseline, Difference in Change Score Between the Groups, and P-value. (Five-point scale, 1 = never, and 5 = always, i.e. more symptoms.)

<table>
<thead>
<tr>
<th></th>
<th>Somatic Symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td><strong>Dance Intervention group</strong> (n = 59)</td>
<td></td>
</tr>
<tr>
<td>Mean score (SD)</td>
<td>2.77 (0.627)</td>
</tr>
<tr>
<td>Mean change score</td>
<td>0.35</td>
</tr>
<tr>
<td><strong>Control group</strong> (n = 53)</td>
<td></td>
</tr>
<tr>
<td>Mean score (SD)</td>
<td>2.77 (0.579)</td>
</tr>
<tr>
<td>Mean change score</td>
<td>0.23</td>
</tr>
<tr>
<td>Difference in mean change score (95% confidence interval)</td>
<td>0.12</td>
</tr>
<tr>
<td>P-value</td>
<td>.30</td>
</tr>
</tbody>
</table>

a At the 8 mo. follow-up, data were missing for 13 participants (12 %).
b At the 12 mo. follow-up, data were missing for 19 participants (17 %.)
c At the 20 mo. follow-up, data were missing for 21 participants (19 %).

**Emotional distress**: The participants rated the frequency with which they experienced stress, nervousness, anxiety, sadness, irritation, and powerlessness during the past 3 months. Table 16 below shows the mean values (and SDs) of emotional distress (pooled together) across the four time points. We further calculated whether the change score differed between the groups at the different time points. For the 8-month follow-up, no difference between the groups was found regarding emotional distress (p = 0.44). There was an effect at 12 months, with emotional distress decreas-
ing more in the intervention group than in the control group ($p = 0.023$). At 20 months, the change score did not differ significantly between the groups ($p = 0.21$).

Table 16. Mean Score (and Standard Deviations) for Emotional Distress at Baseline and at 8, 12, and 20 months’ Follow-Up, as well as Mean Change Score Compared to Baseline, Difference in Change Score Between the Groups, and P-value. (Five-point scale, 1 = never, and 5 = always, i.e., more distress.)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>8 months $^a$</th>
<th>12 months $^b$</th>
<th>20 months $^c$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dance Intervention</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>group ($n = 59$)</td>
<td>Mean score (SD)</td>
<td>Mean change score</td>
<td>Difference in mean change score (95% confidence interval)</td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td>3.06 (0.608)</td>
<td>0.19</td>
<td>(-0.15 to 0.35)</td>
<td>.44</td>
</tr>
<tr>
<td></td>
<td>2.87 (0.662)</td>
<td>0.52</td>
<td>(0.04 to 0.58)</td>
<td>.023</td>
</tr>
<tr>
<td></td>
<td>2.54 (0.714)</td>
<td>0.37</td>
<td>(-0.12 to 0.52)</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>2.69 (0.737)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Control group</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($n = 53$)</td>
<td>Mean score (SD)</td>
<td>Mean change score</td>
<td>Difference in mean change score (95% confidence interval)</td>
<td>P-value</td>
</tr>
<tr>
<td></td>
<td>2.91 (0.590)</td>
<td>0.09</td>
<td>0.10</td>
<td>.44</td>
</tr>
<tr>
<td></td>
<td>2.82 (0.527)</td>
<td>0.22</td>
<td>0.30</td>
<td>.023</td>
</tr>
<tr>
<td></td>
<td>2.69 (0.718)</td>
<td>0.17</td>
<td>0.20</td>
<td>.21</td>
</tr>
<tr>
<td></td>
<td>2.74 (0.773)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a$ At the 8 mo. follow-up, data were missing for 12 participants (11%).

$^b$ At the 12 mo. follow-up, data were missing for 18 participants (16%).

$^c$ At the 20 mo. follow-up, data were missing for 20 participants (18%).
Additionally, when comparing the groups at the 12 months follow up regarding increase/decrease in each separate item; the intervention group reported a significant decrease in the item “stress”, compared to the control group ($p = 0.021$).

**Use of Medication**

At the baseline, 41% of participants in the study used medication (analgesics, such as paracetamol/acetaminophen or NSAIDs, including ibuprofen) once a week or more. The most common reason for the use of medication was headaches, as reported by 61% in the intervention group and 53% in the control group. Stomachaches were reported by 10% in the intervention group and 8% in the control group. Other, less-frequent reasons were migraines, menstrual cramps and joint pain.

The frequency of medication use across the four time points is presented in Table 17. At the 8-month follow-up, no difference was noted between the groups ($p = 0.51$). At 12 months, there was an apparent effect, with a greater decrease in the intervention group than in the control group ($p = 0.020$). At 20 months, the change score did not differ significantly between the groups ($p = 0.19$). This table also shows the changes within each group at each follow-up. In the intervention group, the decrease was significant at every follow-up. In the control group, no significant change was found.
Table 17. Change in Use of Medication at the 8, 12 and 20-Month Follow-Ups Relative to Baseline. For Comparison within Groups (Sign test), the p-value is Presented. For Comparison Between Groups (Mantel-Haenszel Chi Square test), the p-value is presented.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Control group (n=53)</th>
<th>Intervention group (n=59)</th>
<th>p-value within group</th>
<th>p-value between groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>16 (41.0 %)</td>
<td>23 (47.9 %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>15 (38.5 %)</td>
<td>17 (35.4 %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8 (20.5 %)</td>
<td>8 (16.7 %)</td>
<td>0.15</td>
<td>0.011</td>
</tr>
<tr>
<td>12 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>9 (24.3 %)</td>
<td>27 (56.3 %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>22 (59.5 %)</td>
<td>15 (31.3 %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6 (16.2 %)</td>
<td>6 (12.5 %)</td>
<td>0.61</td>
<td>0.0003</td>
</tr>
<tr>
<td>20 months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>13 (35.1 %)</td>
<td>26 (55.3 %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>16 (43.2 %)</td>
<td>12 (25.5 %)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8 (21.6%)</td>
<td>9 (19.1%)</td>
<td>0.38</td>
<td>0.0060</td>
</tr>
</tbody>
</table>

\[a\] At the 8 months follow-up, data were missing for 4 participants in the intervention group and for 7 in the control group.

\[b\] At the 12 month follow-up, data were missing for 11 participants in the intervention group and 13 in the control group.

\[c\] At the 20 month follow-up, data were missing for 12 participants in the intervention group and 13 in the control group.
Experiences of the Dance Intervention

The central conclusions from this qualitative paper about the girls’ experiences were that the dance intervention gave access to and enriched their personal resources. Because the non-judgmental atmosphere and supportive togetherness provided a safe platform, they were able to experience enjoyment and energy in dancing, which gave rise to positive feelings and emotional expression. As a result, they increased their self-trust and discovered a new ability to “take place.” The main category “finding embodied self-trust that opens new doors” represents the girls’ experience of an increased trust in oneself and the ability to approach life with a sense of freedom and openness.

The girls’ experiences of the dance intervention are presented in five generic categories and one main category (Table 18).

Table 18. Overview of the Generic Categories and the Main Category.

<table>
<thead>
<tr>
<th>Generic Categories</th>
<th>Main Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. An Oasis from Stress</td>
<td>Finding Embodied Self-trust that Opens New Doors</td>
</tr>
<tr>
<td>2. Supportive Togetherness</td>
<td></td>
</tr>
<tr>
<td>3. Enjoyment and Energy</td>
<td></td>
</tr>
<tr>
<td>4. Increased Self-efficacy and Self-compassion</td>
<td></td>
</tr>
<tr>
<td>5. Dance as Emotional Expression</td>
<td></td>
</tr>
</tbody>
</table>

Health Economic Evaluation

As measured with the HUI3, girls in the dance intervention group were shown to increase their HRQOL significantly more than those in the control group (0.08 units more [$p = .04$] at the 20-month follow-up). Therefore, the QALY gain at 20 months was 0.10.
A net cost of 383 USD at 20 months and a QALY gain of 0.10 gave an ICER (cost per gained QALY) of 3830 USD after 20 months, or approximately 25,000 SEK in 2011. In the sensitivity analyses, ICERs of up to 50,000 SEK were found. The ICER of approximately 25,000 SEK determined in this work is far below the 100,000 SEK specified as a low ICER in Sweden. Moreover, the costs per QALY were also rather low, and if we assume that the effect will persist over a longer time, the ICER will be even lower.

The intervention costs were calculated to be approximately 670 USD (4500 SEK) for the whole intervention per participant, corresponding to a cost of 25 USD (170 SEK) per dance session per participant.

The mean numbers of visits to the school nurse at baseline were estimated to be 20 in the intervention group and 28 in the control group. At the 20-month follow-up, these numbers had decreased by 11 (-54 %) visits in the intervention group and 7 (-25 %) visits in the control group.

The cost for each visit to the school nurse was estimated to be 58 USD (390 SEK).

The uncertainty was also handled with NMB method, which shows the probability of cost effectiveness when stakeholders are willing to pay 50,000 USD for a QALY; this probability was found to be 95 %.

<table>
<thead>
<tr>
<th>Table 19: Results of the CUA (C.I.). Individual Values in USD.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intervention costs</strong></td>
</tr>
<tr>
<td><strong>Gain in QALY</strong></td>
</tr>
<tr>
<td>Savings in health care (compared with the control group)</td>
</tr>
<tr>
<td><strong>Net costs</strong></td>
</tr>
<tr>
<td><strong>Costs per gain in QALY</strong></td>
</tr>
<tr>
<td><strong>Costs per gain in QALY (healthcare savings excluded)</strong></td>
</tr>
<tr>
<td>Costs per 50 % of QALY gain</td>
</tr>
<tr>
<td>Costs per gain in QALY with 50 % increased intervention costs</td>
</tr>
</tbody>
</table>

Taken together, these results indicate that the dance intervention was valuable and an efficient use of healthcare resources.
Additional Data Relevant to the Study

Beyond the results included in the studies, the following 4 questions should be highlighted:

1. How many girls used antidepressant medication?
In the dance group, antidepressant medication was reportedly used by two girls at baseline, none at the 8-month follow-up, and one girl (who had not used it at baseline) at the 20-month follow-up.
In the control group, only one girl reported antidepressant use at the 8-month follow-up. Taken together, these behaviors are not likely to have influenced the results.

2. How many girls reported psychological treatment?
Regular psychological treatment during the intervention time period was reported by two girls in the intervention group and three girls in the control group.

3. To what extent did the control group engage in PA during the intervention time period?
At the 8-month follow-up, a total of 47 % of girls in the control group reported participating in PA approximately 2 times/week, i.e., for the same duration as the dance intervention; 53 % reported that they did not participate in PA (0 % missing). A total of 25 % reported that they started this PA during the dance intervention time period and had not engaged in it previously.

4. What happened after the dance intervention had ended? Did they keep dancing?
One year after the intervention had ended, i.e., at the 20-month follow-up, 92 % of the intervention group and 57 % of the control group were engaged in some form of PA, in general and/or in an organized setting. Some examples included dancing, running, group training, strength training at the gym, horseback riding, swimming and ball games. A total of 56 % in the intervention group and 6 % in the control group were engaged in dancing (Table 20).
Table 20. Leisure-time Activity at the 20 Months Follow Up for Each Study Group.

<table>
<thead>
<tr>
<th>Activity Description</th>
<th>Dance group n=48 (11 missing)</th>
<th>Control group n=47 (6 missing)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engaged in some form of PA, including dance</td>
<td>44 (92 %)</td>
<td>27 (57 %)</td>
</tr>
<tr>
<td>Dance (specifically)</td>
<td>27 (56 %)</td>
<td>6 (13 %)</td>
</tr>
<tr>
<td>PA (in general and/or organized)</td>
<td>17 (35 %)</td>
<td>21 (45 %)</td>
</tr>
<tr>
<td>Music-based activity (playing an instrument / singing)</td>
<td>0 (0 %)</td>
<td>2 (4 %)</td>
</tr>
<tr>
<td>No leisure time activity</td>
<td>7 (15 %)</td>
<td>18 (38 %)</td>
</tr>
</tbody>
</table>
DISCUSSION

Main Findings
The main findings are that this dance intervention gave increased SRH, decreased somatic symptoms, emotional distress and use of medication, increased feelings of self-trust, and were considered cost-effective. The intervention also played a role in sustaining new PA habits, including dance.

The non-judgmental atmosphere and supportive togetherness was shown to represent the fundamental basis and setting of the intervention (paper III). Self-trust, the main category observed in paper III, may be viewed as a starting point of the health effects. Self-trust emerged during the dance intervention (underpinned by all the categories described in table 18), and may have contributed to the decrease in emotional distress and somatic symptoms (paper II). This may in turn have positively affected SRH (paper I) and, quality of life (paper IV). See figure 4.

Figure 4. The Results from the Papers Visualized in a Model. The Qualitative and Quantitative Data Combined Can Suggestively Constitute an Evolving Process.
Similar to self-trust shown in the first part of this model, ‘self-esteem’ and ‘seldom feeling lonely’ are examples of resilience factors in adolescence that are associated with a lower prevalence of psychiatric symptoms and chronic pain. The second part of the model is in line with Legrand et al. who stated that improvements in self-perceived physical condition occurred before reductions in depression. The authors suggested that physical condition may be a mechanism for improving mental health. Similarly, Svedberg et al. highlighted that somatic symptoms can explain the quality of life. This suggested model that combines qualitative and quantitative data may facilitate an understanding of the health effects’ process, however, it has not been tested and moreover, a circular relationship among these outcomes is likely.

The main results of this thesis may also be discussed in terms of the demand–control model (a theoretical framework for the relationship between psychosocial characteristics and health outcomes in occupational stress). The girls in the present study all exhibited internalizing problems and this complex symptomatology may be understood as logical responses to overwhelming demands that exceed their appraised ability to cope. If the dance intervention contributed to an increased sense of control and additionally provided social support, this may partly explain the observed improvement in health. Although the demands (e.g., those at school), still could be high; according to the demand–control model; these demands would be more manageable if they were balanced by a high sense of control and social support.

**Interventions for Adolescent Girls**

Adolescent girls are a challenging target group regarding PA interventions due to several barriers, particularly, the pressure to conform to social gender stereotypes. Many girls relate to the thin ideal in current society and are embarrassed to participate in PA because they do not measure up to the ideal body. A perceived lack of time has also been proven to be a barrier for this target group. There are indications that school work and other commitments are higher priorities than PA.

PA to strengthen mental health in adolescent girls has been investigated with little regard to context and guidance; however, organized, non-competitive, leisure time interventions are considered beneficial for this target group.
A meta-analysis from 2015 of 45 studies of PA interventions for adolescent girls revealed stronger effects of theory-based interventions and interventions that targeted ‘girls only’. Moreover, collaboration with the school was demonstrated to have a favorable effect due to the supportive physical environment and facilitation of recruitment. An after-school setting for PA interventions was also suggested by Behrens et al, who additionally highlighted the importance of ensuring the quality of these programs to increase adolescent PA levels.

Dance has the potential of constituting a good example for PA interventions as research shows that dance appeals to adolescent girls, which in turn incorporates involvement, and contributes to an increased physical effect. However, it is important to consider that dance may not be suitable for all. The current study was a selective intervention; the study group was recruited by school nurses according to inclusion criteria’s, but also in this group, obviously a wide range of interests may occur.

**How the Results Relate to Previous Research**

**Self-rated Health (SRH)**
The girls who participated in the dance intervention exhibited greater improvements in SRH than the girls in the control group. This is in line with a study in Finland that evaluated 7,063 adolescents (16 years of age); very good SRH was associated with high levels of PA in both girls and boys. A connection between SRH and PA was also demonstrated in cross-sectional data from the Canadian Community Health Survey. Among 7725 participants aged 12–17 years, excellent/very good SRH was reported by 78% of the active vs. 62% of the inactive adolescents ($p=0.001$).

Interestingly, the use of a SRH question that includes the word ‘feel’ has been proven to capture a holistic view of health among adolescents, i.e., a view that includes social, mental, and physical aspects. Moreover, girls tend to emphasize stressors more than boys, which adds to the understanding of the current results regarding the SRH reported by the girls in the study.

**Adherence to the dance classes**
During the time period of 8 months in the current study, 67% of the girls had attendance rates of 50% to 100%. These rates can be considered high.
because approximately 50% of individuals who start an exercise program are in risk of dropping out within the first 6 months \(^22\).

Maintenance of PA is critically important because ongoing participation is necessary to sustain health benefits \(^{167}\).

In our study, 11 of the 59 participants in the intervention group dropped out; thus, 81% completed the dance intervention. In the Bristol Girls Dance Project (BGDP) in the UK, 41 of the 76 intervention girls (53.9%) still attended the dance classes at the final follow up \(^{128}\). The BGDP was a universal intervention with a large sample. A smaller group was studied by Legrand et al \(^{156}\); this study involved a 7-week randomized exercise study with women with depression symptoms, and 15 of the 22 (68 \%) participants completed the program.

This thesis also finds an association between a higher number of symptoms and lower participation, consistent with the results of a study by Rabbitts et al \(^{206}\), who demonstrated that higher pain intensity was associated with lower PA levels on the next day.

**Overall experience of the intervention**

Among the girls included in dance intervention group, 91.5% rated the intervention as a positive experience. Experiences from the intervention will be further discussed in study III because the qualitative data provide a deeper insight into the factors determining these rates.

**Somatic Symptoms and Emotional Distress**

The reduction in somatic symptoms in paper II can be linked to a study by Myrtevit et al \(^{183}\), who demonstrated that PA is protective against neck-shoulder pain in adolescents. Moreover, for adolescents with chronic pain, higher PA levels predict lower pain intensity ratings \((p=0.004)\) \(^{206}\). The pain-relieving effects of PA have been suggested to originate from the interaction of many physiological and psychobiological mechanisms \(^{220}\).

The reduction in emotional distress is similar to recent research by Parker et al \(^{197}\), who compared PA with psychoeducation for young people (15–25 years of age) with a high prevalence mental health problems. The results demonstrated that the decrease in depressive symptoms was significantly higher in the PA group.

**Use of Medication**

The decrease in the use of medication in the dance intervention group logically follows the reduction in somatic symptoms described above; the
reduction in symptoms/problems resulted in a need for less medication. However, emotional distress also plays a role because stress may heighten the pain experience for adolescents. Associations between reduced analgesic consumption, reduced pain and PA were demonstrated in a recent study by Sandhu et al, who investigated orthodontic pain perception in adolescents. PA has been suggested to influence analgesic consumption via “exercise-induced hypoalgesia”, i.e., increases in pain thresholds and decreases in ratings of the unpleasantness of painful stimuli during and after exercise.

Experiences of the Dance Intervention
The qualitative analysis of paper III resulted in five generic categories and the main category of “finding embodied self-trust that opens new doors”. This recast and enriched perception of the self and life that the girls described has been explained by Anderzen-Carlsson et al: “by using the body in new ways, one can learn to see things differently”. Similarly, interviews of a sample of ten adults (in the USA) about the effects of dancing highlighted personal development. Dance was experienced as providing tools to benefit areas in life that could use improvement, develop relationships, and communicate more effectively. Dance was also described as “a way to express a part of themselves or to find a voice in areas of their daily lives where they are typically unable to express and voice what they are feeling”. Moreover, fun, exercise, and freedom of expression were mentioned.

The ability to approach life with an enriched sense of freedom and openness described in the current analyses is similar to the results that emerged in a basic body awareness therapy intervention by Danielsson et al. A salient finding from the analyses in paper III is the role of the dance sessions in enabling the participants to use their embodied self-trust and enriched body awareness as a stepping-stone to a new positive attitude toward themselves and others. This finding is consistent with another study by Danielsson et al, who described increased body awareness as an opportunity to encourage an embodied self-trust and to identify mechanisms to withstand and manage anxiety symptoms.

The concept of self-trust is described by Earl as the faith (i.e., belief plus action) in one’s ability to fulfill a perceived task and is marked by a certain flexibility toward solving the problem at hand. Self-trust is closely related to self-efficacy and self-esteem, but Earl particularly highlights the
notion that self-trust predicts creativity. Moreover, self-trust is related to an unwillingness to give up, which is importance in achieving creativity. Earl concludes that significant others likely contribute to the sense of “I can”, which takes a person from “being cared for” to levels of independence at which they can “risk” engaging in new activities that might have been unexpected or beyond their capacities.

This interesting reasoning can be linked directly to a case study by Holyoake and Reyner, that described the experiences of a nurse-led dance group for young people (12-18 years old) with a mental illness in an adolescent unit.

The authors describe that the young people progressed through a process until they trusted one another in order to do things they normally would not do; “By doing this in a safe yet creative spirit they learnt about themselves.”

This is in line with the findings in paper III. According to the girls’ narratives, trusting oneself to engage in new creative challenges within and outside the frames of the dance intervention was a central experience.

Moreover, similar to the current study, the previously described case study also targeted adolescents with mental health problems. The authors describe that the dance-group helped the young people to creatively ‘rewrite themselves’ and experience a release from many over-burdening intellectual concerns, which in turn created self-confidence for the target group.

The generic categories “An Oasis from Stress” and “Supportive Togetherness”, was shown to represent the fundamental basis and setting of the intervention, crucial for participation. The narratives from the girls emphasized the importance of a non-judgmental enjoyable atmosphere without the typical associated school pressures. Highlighting enjoyment rather than performance has been shown to be important for increasing PA participation among adolescent girls. Notably, in the previously described dance intervention “BGDP”, the perceptions of competence, relatedness and motivation for PA were shown to be lower in the dance group than the control group, which was not hypothesized. The authors suggest the timing of the measures as one potential explanation; their perceptions of competence may have been threatened and social disagreements between girls might have occurred when girls were preparing for a performance. Thus, the role and effects of performances in dance interventions is of value to discuss.
Health Economic Evaluation

The current study was shown to be cost-effective. The ICER was 3380 USD (27 600 SEK) and the QALY gain was 0.1 (measured with HUI3). This can be compared with four other studies targeting adolescents:

Firstly, a study from the UK of a cognitive-behavioral therapy (CBT) for high-risk adolescents concluded that the CBT was not cost-effective compared with the control groups. A small (0.00054) QALY gain and high costs were associated with the CBT intervention. The effects observed were small and mixed in terms of indicating potential benefit or harm. The authors reported challenges including the logistics of fitting the programme into an already busy curriculum and difficulties engaging teachers and young people in a culture that is not currently conducive to implementing such programmes.

Secondly, a cost-effectiveness analysis of a CBT intervention to prevent depression in at-risk teens (the indicated level) in the USA indicated that the intervention was cost-effective. The ICER was 9,275 USD (approximately 80,000 SEK), with a total cost of 3,325 USD (28,000 SEK) and a QALY gain of 0.059 (as measured by Depression-Free Days transformed to QALYs using utility weights from the literature). The CBT groups were led by a master's-level therapist and were conducted in clinic offices.

Thirdly, a Swedish study of the cognitive behavioral intervention “DISA”, which aimed to prevent stress and depressive symptoms in adolescents at a universal level, reported an ICER of 5200 USD (42,500 SEK), a QALY gain of 0.04 (measured with EQ-VAS). The “DISA” groups were led by school health staff.

Finally, the after-school dance intervention study “BGDP” is described. The intervention targeted 11- to 12 year-old girls in 18 schools in the UK, and was aimed to increase PA participation. The average cost was approximately 90 USD (750 SEK) per girl for the whole intervention.

In the current study, the costs for the total intervention were 540 USD (4470 SEK) per each girl. The “DISA” study showed intervention costs of 205 USD (1700 SEK) per participant.

The difference in costs between the current intervention and the two interventions described above is attributable to differences in prevention levels; the “BGDP” and “DISA” targeted the universal level (targeted more girls), whereas the current study targeted a selective level. Although fewer participants contributed to higher costs per girl, the total cost for all participants was lower in the current study. Additionally, the number of
sessions varied; the current study included 48 sessions, “BGDP” had 40, and “DISA” 10 sessions. Altogether, these interventions show that it may be cost-effective to prevent and treat health problems among adolescents with dance as well as with CBT, but more evidence is needed for more detailed and certain conclusions.

Cost estimates in this discussion above are valid for 2016, and cost estimates from the current study presented in paper IV are valid for 2011. In this discussion, all cost estimates were converted from Swedish krona (SEK) and Pound (GBP) to US Dollar (USD), using an approximated exchange rate of 1 SEK = 0.12 USD and 1 GBP = 1.41 USD (currency 30 Mar 2016).

**Effects at Different Follow-Up Times**

The girls who participated in the dance intervention exhibited greater improvements in SRH, somatic symptoms, emotional distress and use of medication than those in the control group at the 12 months follow-up; however, at the 20-month follow up, the significant effects had faded (SRH: $p = .38$; somatic symptoms: $p = .72$; emotional distress: $p = .10$; and use of medication: $p = .19$). The reason for loss is not known. Although 92% of the girls in the intervention group continued with some form of PA or dance after the intervention ended, the modalities differed. Running or gym training in non-organized forms may not provide the same socialization and sense of inclusion. Dance schools offer this socialization, but the demand-less environment differs. Previous studies suggest that the significant effects of dance may not be maintained after the end of the study period \(^{59}\), and the need for participants to continue dancing to maintain benefits was highlighted in a study from 2015 \(^{227}\).

In papers I and II, the greatest difference between the groups occurred at the 12-month follow-up. This finding accords with a study of a 13-week dance intervention for women with breast cancer conducted by Sandel et al \(^{218}\). Similar to our study, the greatest improvement in mental health (as measured with the SF-36) was observed three months after the intervention had ended (baseline= 48.8/ SD10.2; week 13= 52.3/ SD10.9; and week 26= 54.9/ SD6.9). The extent to which the completion of an intervention affected the group can be discussed. There were no existing dance activities with a demand-less focus for the girls to continue in, and the pending disruption of the group generated some worry among the girls. However, this aspect has not been investigated.
The girls included in this study were obviously exposed to outside influences in addition to the intervention. For example, periods of examinations in school may have increased feelings of stress and thus affected the girls’ general well-being. Both study groups experienced the peak intensity of school examinations in spring, and thus the 12-month follow-up can be considered important because it was not influenced by this stress factor (i.e., it was conducted after the summer holiday).

**Methodological Considerations**

The four studies of this thesis investigated effects and experiences using both quantitative and qualitative methods. This combination of methods integrates different types of knowledge and mixes two different views of reality. Different paradigms create a broader view of research because different types of data balance each other; thus, the mixed methods can be viewed as a strength of this thesis. Other strengths include the longitudinal randomized design, the extensive intervention time period and the long-term follow-up. There is a great need for studies that establish the sustainability of interventions, and in this case, the 20-month follow-up occurred approximately one year after the end of the intervention. An additional strength is that the current intervention was aimed at adolescent girls with internalizing problems. This is an important target group for PA interventions. However, the results must interpreted in light of some limitations.

**Limitations**

We cannot determine whether one part of the intervention had a greater effect than another. Because we examined the effect of the entire intervention, we cannot draw any conclusions about the causal relationships between the effects and dance *per se*. The group setting (or, for example, the relaxation period at the end of the class) may explain most of the observed health effects. Additionally, it is possible that the behavior change alone (i.e., engaging in a new intervention) contributed to the decreases in depressive feelings and negative thoughts and cognitive functions 19.

The girls that participated in the dance intervention during year one and two were grouped together for data analysis. However, mixing the data from the fifty girls that were part of the control group during year one and participated in the dance intervention during year two with the data from the newly recruited girls (either at year one or two), could be troublesome. The girls previously part of the control group could show separate baseline characteristics (such as expectations) at the start of their dance inter-
vention compared to girls that had not previously been exposed to the study. Thus, to avoid the risk of bias, only data from the newly recruited girls during year two was included in the analysis and the data from the girls previously part of the control group were excluded.

In paper I, we used t-test and linear regression to evaluate mean difference in SRH. Considering that this is an ordinal scale without equidistance, nonparametric tests, Mann-Whitney, were also performed with the same results.

Research using a variety of measures simultaneously in dance intervention would help to decrease or eliminate the possibility of bias. The data collection in this project does not include objective physical health evaluations. Biological markers complement self-reported data, and add an interesting dimension to the evaluation. Neither did we objectively assess the amount of PA achieved during the dance classes. Assessment of PA, for example with accelerometer (activity monitor), could elucidate the contribution to the existing PA recommendations of 60 min MVPA/day and deepen the understanding of the effects. However, since hip-mounted accelerometers underestimate the energy expenditure for upper-body movement which is expected during dance, most dances may not be fairly investigated with accelerometer.

The results from study III highlight the importance of the demand-less atmosphere in the dance class. According to the girls, an oasis from perceived expectations, demands and the strenuous gendered sociocultural norms was crucial for participation. Therefore, a limitation may be that this issue wasn’t further addressed. It might have been valuable to include a discussion/reflection during the intervention period that supported awareness of gender imbalances and ability to explore different sociocultural expectations. This might have further empowered the girls in how to deal with pressures in everyday life. On the other hand, the dance intervention contributed with the ability to “take up more space”, to straighten the bodily posture and to increase embodied self-trust, which in turn is a non-verbal empowering development.

Considering the intervention and future implementations, one limitation is that not everyone with a dance education can be an instructor. When young people are involved, educational qualifications, understanding and experience are considered important. The role of the instructor/group-leader goes beyond teaching choreographies and includes the meeting of a vulnerable group of adolescents. A medical or pedagogical education is
necessary, and such education should preferably be combined with experience in working with stress-related mental health-problems in adolescence.

**Risk of Bias**

When acting simultaneously as a researcher and a dance instructor, research objectivity and impartiality are important considerations. The perspective of the instructor differs from that of an impartial analyst, but the two roles are not always in conflict. In the current study, the different perspectives broadened the understanding of the study group, and the resulting insight into the phenomenon facilitated the research work. However, it is important to consider that serving as both a researcher and an instructor may have positively biased the responses from the intervention group due to the “Hawthorne effect.” Although the mechanisms of this effect remain unclear, research participation clearly influences the behavior under investigation, and this influence must be considered when interpreting the results. However, the variety of the results likely indicates that the girls were honest in their answers.

Blinded studies are not possible in this type of intervention study because there is no way to blind participants to whether or not they are receiving the dance intervention. There is also a risk of potential bias in favor of the dance intervention arm due to the subjective nature of the outcomes and the fact that the girls knew the study’s purpose. This type of bias easily arises in subjective measures. The risk that the girls in the intervention group reported higher values to please the instructors or to exhibit gratitude to the research team should be considered. However, not all of the results were significant, suggesting that the girls responded to the questionnaire in an honest manner.

Paper I investigated SRH. Joffer *et al* has previously highlighted the risk of biased answers in SRH. Some respondents in their study indicated that they did not wish to admit to others or themselves that they felt badly, which could result in an underrepresentation of the adolescents who felt badly. A high level of privacy is recommended to increase the likelihood of honest answers. In our study, we had access to an auditorium during the administration of the questionnaires, which provided privacy to the girls while writing. Additionally, some of the girls completed the questionnaire at home.

Moreover, in paper I, the baseline scores were lower in the intervention group than in the control group, and lower scores generally improve more than higher scores. There is a risk of overestimating the treatment effect by
examining the change in scores. However, linear regression revealed that a significant difference between the groups remained at the 12-month follow-up despite the inclusion of the baseline values.

Similarly, for the cost-effectiveness analyses in paper IV, an influence of the differences in HRQOL (as measured with the HUI3) at baseline, although not significant, on the cost-effectiveness ratio cannot be ruled out. Lower values at baseline are associated with greater potential increases. Moreover, the possibility that a control group with an identical HRQOL at baseline would have exhibited a larger increase in HRQOL than the control group in our study cannot be ruled out. Hence, some caution in interpreting the results is recommended.

Several questions analyzed within this thesis required the girls to report back in 3 months. Recall bias is always a threat to the internal validity of this type of self-reported data about past experiences, and answers are limited by an individual’s memories.

Furthermore, in paper III, there is a risk that the interviewed girls provided socially desirable answers because they were aware of the interviewer’s (my) involvement in the intervention. However, for this reason, all interviews were deliberately scheduled to occur post-intervention, after the instructor–participant relationship had ended. Moreover, the girls were informed that the interviews were not an evaluation of the intervention but rather a story of their experiences of the intervention over the past year. The interview structure was discussed repeatedly with experienced colleagues, and the interview process began with three pilot interviews followed by evaluations. The interviews were very rich, and the data collected was considered trustworthy, particularly because these data were consistent with other data from the same RCT study. My position as both the interviewer and one of the dance instructors apparently facilitated building of trust and enabled the girls to feel secure in the interview situation.

Validity

Among the highest priorities in research are internal and external validity. In paper II, one limitation is that the validity and reliability of the 5-point scale used to evaluate the somatic symptoms and emotional distress have not been verified. However, this type of basic query construction is well recognized and frequently used in other regions in Sweden. Moreover, this construction enabled us to compare our study group with a larger population, i.e., the data from the girls who participated in the “Life and
Health Young People 2007” survey in the region in which the study was conducted.

In the analysis of the qualitative interviews in paper III, there is a risk that the internal validity was influenced by pre-understanding. In qualitative analyses, it is always relevant to include a discussion of the role of pre-understanding because every interpretation of a text is assumed to be included in the next interpretation 219. Inevitably, earlier understandings are not unprejudiced. However, to increase trustworthiness, the interviews were discussed several times by all authors, and the overall intention was to bracket the researchers’ pre-understandings 65. Additionally, to increase the internal validity and trustworthiness of the data 198, interview excerpts are provided in the paper. These excerpts also enrich the descriptions. Because the qualitative results were not intended to be generalized, external validity is not discussed.

In paper IV, the first limitation is that the validity and reliability of the Swedish version of the HUI3 instrument have not been tested. However, the HUI3 is a well-recognized instrument and provides good estimates of utility values in community-dwelling, relatively healthy, populations 95, 104, 123.

The second weakness is that healthcare consumption, i.e., the number of visits to the school nurse, was an uncertain factor. A test of this factor revealed that there was a considerable difference between the number of visits reported by the girls, which was used in the analyses, and the number of visits noted in the medical records. The school nurses expressed difficulties with the charting of social and mental health issues related to a lack of time, tradition, the structure of the journal, and ethical considerations 57, 229. Thus, we chose to rely on the girls’ self-reported data, which in turn, were based on a retrospective open question with the risk of recall bias. However, a sensitivity analysis was performed to address this limitation. The ICER was therefore calculated without the savings in healthcare, which produced an ICER of 45,000 SEK. The sensitivity analysis also revealed that the ICER was 51,000 SEK when using 50% of the gained QALY and 48,000 SEK when the costs were assumed to be 50% higher than calculated. Thus, the analyses revealed that the results were still well below the estimated value for a low-cost intervention.

Another limitation in paper IV is that only the savings for School Health Services were considered. The larger increase in the HRQOL of the intervention group may also have led to savings for other institutions, such as primary care institutions, youth centers, and the overall Welfare Ser-
vices of the school. Because research has demonstrated associations between internalizing problems in adolescence and mental illness in adulthood, it can also be assumed that the greater increase in HRQOL after the dance intervention may lead to further savings. However, the current study was too small to provide support for this notion.

Moreover, in paper IV, extrapolation of the trial data was necessary. In this analysis, we used last observation carried forward (LOCF) approach to address missing data. This approach has been criticized in recent years for weaknesses in validity and estimations of the result. Other methods were considered, but the LOCF approach was selected because both groups in the study exhibited improvements in well-being after 20 months. Because the girls in the study generally exhibited increases in QOL, it can be assumed that the results were more likely an underestimate than an overestimate, as some critics have claimed is often the case.

**Risk of Stigmatization**

Because this intervention was selective and targeted girls with different types of mental stress-related problems and the purpose of the intervention was well known, there was an obvious risk of stigmatization. When comparing different types of approaches, participation in selective and indicated programs can be stigmatizing because only some individuals are included, and universal approaches have less risk of stigmatization. The potential for stigmatization was thus considered. However, strikingly, stigmatization was not observed during any part of the project. On the contrary, the girls spoke very freely of their internalizing problems and described positive feelings of “finally being seen” and “invested in”. Moreover, the school nurses reported no problems with recruiting. This situation will most likely not apply to all settings but is supported by Rapee et al. who also observed that girls with internalizing problems that were included in a selective program felt selected in a positive sense.

The focus on dance activity and individual resources may have lent an overall healthy and positive focus to the intervention, which might have contributed to reduced stigma and increased positive results. Optimism and hope have been demonstrated to contribute to flourishing mental health.

By contrast, in DISA, the depression prevention program aimed at adolescents, the participants expressed opinions that the program focused too much on negative matters. The authors suggested that a more positive,
health-promoting focus might be more widely accepted by this age group and recommended such a focus for future program development 106.

Overall, although stigma is an important aspect, suffering due to psychological problems is likely considerably greater than that due to the possible stigma elicited by participation in a prevention program 208, 243.

The Control Group
Similar to the intervention group, the control group exhibited increased SRH and decreased somatic symptoms, emotional distress and use of medication. These findings have several possible explanations:

1. Entering a research study generates attention not only from the research team but also from significant others that know about the participation.
2. As discussed by Bojner Horwitz 35, it is possible that the knowledge that the participants would later have access to the same intervention contributed to feeling better.
3. Inclusion in a study with more than a hundred other girls probably contributed to a feeling of not being alone with the internalizing problems. This feeling of community might have led to increased mental health.
4. Among the participants, 47% participated in PA approximately 2 times/week (similar to the dance intervention), and of these participants, 25% reported that they had initiated this PA during the dance intervention time period and had not engaged in similar activities previously. These findings might have influenced the results, but the extent of this influence is not known.

Possible Explanations for the Effects and Experiences
The health effects and experiences presented in the papers and their associations with the dance intervention may have several explanations, which cannot all be covered within the frame of this thesis. Moreover, additional research in this area is required. However, possible explanations of effects are presented below.

Physical, Emotional, and Social Aspects
Possible explanations for the proven effects and experiences regarding the physical, emotional and social aspects are presented below.
Physical

- The physical effects from dance as a physical activity include neurobiological effects related to the synthesis of new neurons in the brain\(^{27,90}\). Serotonin and endorphins stimulate nerve cell growth in the hippocampus (a center in the brain for memory and learning)\(^{90,93}\), and PA also plays a role in normalizing increased cortisol levels due to increased activity of the hypothalamic-pituitary-adrenal (HPA) axis. PA positively influences brain structure via cognitive vitality and neural function\(^{203}\) and increases the levels of brain-derived neurotrophic factor (BDNF)\(^{249}\). Moreover, young people may benefit more from PA than older people, and because their central nervous system structures are developing, PA may be necessary for optimal neural development in adolescents\(^{258}\).
- Physical pain has been suggested to distort bodily perception by demanding attention and by blocking awareness of non-painful body parts\(^{86}\). The girls included in this study reported decreased physical symptoms, such as pain in the head, stomach and shoulders (paper II). These findings might be connected to the reported increases in body awareness during dance and in daily life (paper III), which could have decreased attention focused on symptoms/pain.
- Dance has been demonstrated to increase body strength and aerobic capacity in adolescent girls\(^{61}\).
• Dance activates and stimulates the brain because it requires the integration of spatial patterns, rhythm, synchronization to external stimuli and whole-body coordination.  

• Bodily movement has long been regarded a fundamental expression of the essence of human life in dance and movement therapy. Sheets-Johnstone highlights a feeling of aliveness and refers to the residual energized vitality following sport activities. Moreover, Sheets-Johnstone suggested that this “life-proclaiming dynamic experience” is the origin of the therapeutic potential of movement.  

• Cultural activities and PA during leisure time (such as dance) are thought to positively influence anabolism, which stimulates bodily recovery and regeneration and is consequently antagonistic to stress and associated with health.  

Emotional  

• Dance has been suggested to contribute to increased mental health via mechanisms that include non-verbal expression, self-understanding, and the promotion of positive feelings.  

• Female dancers are more aware of their emotional processing and exhibit a greater ability to interpret the emotions of others than both male and female non-dancers. Our movement patterns affect both our own perception of emotions and the manners in which others perceive us, and have the potential to significantly alter mental states and improve well-being.  

• Dance activity and training likely influence the body’s emotional interplay with others and positively influence alexithymia. Embodied cognition, emotional perception, and action have been discussed as relevant factors. Because research has demonstrated that alexithymia is associated with internalizing problems, these factors might have applied to the current target group.  

• Enjoyment is obviously a pleasant emotional state that can arise during PA. The importance of focusing on enjoyment in PA interventions has been highlighted repeatedly in research related to adolescents. For adolescent girls, enjoyment has been found to correlate with the PA participation level. Greater PA enjoyment influences the individual ability to engage in regular PA (higher self-efficacy ratings).
• When dancing, complete absorption by the activity can occur. This state of *flow* is considered optimal for intrinsic motivation and is a holistic experience of happiness, concentration, timelessness and inner clarity. A sense of serenity that eliminates worries about oneself can arise. In intrinsic motivation, whatever produces flow becomes its own reward.

• Cultural interventions have been suggested to increase awareness of feelings and sensations and improve the ability to describe and identify feelings. The theory of *the Emotional Brain* by LeDoux highlights the notion that cultural modalities can “surprise” the cognitive brain unconsciously. Emotionally loaded visual and auditory stimuli evoke activities in the emotional brain much more rapidly than in the cognitive brain; thus, cultural activities surpass automated thinking and create new "pathways" that can trigger the participants’ awareness of different emotions and increase well-being.

• Music and dance have always been considered inseparable. Musical engagement is associated with greater emotional competence. Music is a useful tool in the treatment of children and adolescents with psychiatric disorders due to the engagement of multiple areas of the brain during music listening. Active musical participation provides neural engagement and leads to successful outcomes for children with various needs in the social, behavioral, emotional, cognitive/academic, motor, and verbal domains.

Social

• Social bonding is one of the most primary instincts we have as human beings and is essential for health and well-being. Acceptance in a social group is therefore a crucial innate goal, and exclusion can be highly distressing. Thus, supportive relationships are considered important buffers against stress, and relationships with parents and with peers constitute two sources of social support that contribute to adolescent self-esteem.

• Adolescence is a significant period of social transition, and spending time with friends is very important. Family relationships change during adolescence, and less time is spent with parents and more with peers.
• Being engaged in one or more organized, group leisure time activities is associated with higher life satisfaction and improved SRH regardless of age or gender 11.

• A supportive social environment can benefit stressful life situations 245 because the feeling of communion with a group increases feelings of inclusion. Togetherness and a sense of unity can add meaning and strength to adolescent girls' lives 154.

• Relatedness is also included in the SDT 216 and was a key aspect in planning and conducting the intervention in the present study. Relatedness was also a key aspect in the qualitative results. Performing the intervention in a social environment most likely influenced the health effects 127.

• Communication in dance involves general psychological processes such as motor simulation via mirror neurons 244. Observing peers in action involves the same repertoire of motor representations that are used to produce the action, and mirror neurons fire when watching someone else perform or act 174. Mirroring in movement increases empathy 269, and improve body awareness, self–other awareness, psychological well-being, and social skills in young adults 146.
The Dance Intervention
To gain physical and physiological benefits, successful recruiting and retaining participants in dance is of importance\textsuperscript{227}. Possible explanations for the observed health effects and experiences in the current study include the following:

- **Non-judgmental atmosphere.** The lack of demands or performances (external rewards). The fact that they described the intervention as an oasis from the stressful internal and external pressure that they dealt with on a daily basis (paper III), highlight the importance of a “time-out” from perceived demands and gendered sociocultural norms.

- **Competence.** In the current dance intervention, the choreographies were planned to make the girls feel slightly challenged, but the strongest focus was on enjoyment and ensuring that everyone had the chance to feel competent. Feeling successful in PA is an important variable in improving self-perception by young people\textsuperscript{79}. However, for a person to be fully immersed in what he or she is doing, the activity must be neither too easy nor too difficult\textsuperscript{66}. This fine balance is mentioned by Springer \textit{et al}\textsuperscript{240}, who suggested that PA interventions should be challenging but manageable to build confidence for sustained activity and increased PA participation.

- **Socialization.** Performing the intervention in a social environment most likely influenced the effects\textsuperscript{127} because the group interactions provided an opportunity to make new friends\textsuperscript{127} and practice cooperation with others\textsuperscript{209}. During the intervention time period, the group development included increased trust, caring, commitment, and empathy among the participants. The reflections at the end of the dance class were most often brief but occasionally served as a forum for self-disclosure. This process created a climate of trust in which the girls felt secure in sharing their emotions. Moreover, “not being alone”, in the context of internalizing problems, might have contributed to developing a form of silent togetherness.

- **In line with their interests.** Because intrinsic motivation is an important aspect for retaining PA\textsuperscript{216}, and thus gain health effects, it is important to offer a form of PA that is in line with the interests of the intended target group\textsuperscript{207}. Dance is likely to meet these suggestions\textsuperscript{192}.
• **Autonomy.** The girls in the dance intervention had the opportunity to provide some input into the dance classes regarding the music and dance themes. They were given alternatives, and the girls themselves always created parts of the choreographies on their own. Thus, the dance intervention was developed in collaboration with the girls themselves. Such collaboration is thought to facilitate a sense of ownership\(^{127}\) and perception of autonomy\(^ 5\).

• **Positive focus.** The “dance project” was designed to have an overall positive focus. In line with this focus, research has demonstrated that interventions that target mental health among adolescents should highlight the following factors: hopeful thinking, attention to positive information\(^ {277}\), enjoyment\(^ {127}\), promoting a positive mood, reducing negative emotions, and strengthening interpersonal relationships\(^ {103}\). Moreover, Lerner *et al*\(^ {157}\) recommends that community-based programs aimed at enhancing youth development should focus on the strengths that young people possess: competence, confidence, (positive social) connection, character and caring (or compassion). The positive energy in dance and music may have contributed to the goal of making the dance class a free-zone from potential everyday stressful events.

• **Time period.** A time period of greater than 6 months is suggested to adopt a new physical activity behavior\(^ {167}\). Although 8 months can be considered a long time, this duration was beneficial for the girls’ personal development and contributed to the feeling of community in the group. Moreover, a duration of two semesters was practical because this duration followed the school’s semesters.

• **“Girls-only” environment.** The girls sometimes expressed the girls-only environment as a break from gendered patterns and expectations.
CONCLUSIONS

This thesis demonstrates that this dance intervention for adolescent girls with internalizing problems was feasible, played a role in sustaining new PA habits, and achieved the following results:

- improved self-rated health
- high participation adherence
- a positive overall experience

- decreased somatic symptoms and emotional distress
- decreased use of medication

- an experienced increase in self-trust

- cost-effectiveness compared with usual school health services alone

For self-rated health, somatic symptoms and emotional distress, the strongest effects appeared after the intervention had ended. The effects did not persist until the long-term follow up. The generalizability of the trial findings will be investigated in forthcoming articles. Non-judgmental atmosphere and supportive togetherness was important aspects for participation. Although dance may not be suitable for all, this thesis points out the role of enjoyable, social and non-judgmental physical activity in influencing mental health for this target group. More research with larger groups is needed to confirm these results.
Clinical Implications
The results of this thesis may provide practical information for health care staff, school personnel and caregivers (in both primary healthcare and child & adolescent psychiatry) regarding the areas of adolescent health promotion, prevention and treatment. Detailed examples of how to design PA interventions and key aspects that might facilitate implementation can be valuable for overcoming the future challenge of reducing the burden of internalizing problems for adolescent girls.

The increased mental health problems in adolescence and the high rates of sick leave resulting from depressive and anxiety disorders among young adults in Sweden provide strong motivation to target this age group with selective interventions.

To accommodate the individual differences in adolescent patient groups, health care providers would likely benefit from a variety of treatment methods to complement antidepressant medication. As described in this thesis, dance could constitute one example of a non-pharmacological intervention with promise as a complementary treatment in school health care, primary healthcare and/or CAP. Previous dancing experience is not required. This type of intervention might also motivate this target group to engage in active and positive forms of self-care, thereby alleviating the health care workload and contributing to sustained healthy habits for adolescent girls.

Cost-effective interventions that complement school health care can help facilitate and possibly broaden the range of existing interventions in the after-school setting. The proven cost-effectiveness in complementing school health services with dance intervention for this target group may play a role in future regional planning of health-promoting interventions. Moreover, because newcomers often have difficulties with the Swedish language, dance can be valuable for integration and communication. Interventions that can be applied across cultures and for people who find it difficult to verbally articulate thoughts and feelings are needed. Indeed, dance constitutes a form of communication that everyone can speak.

Increasing knowledge among school health staff and caregivers and raising awareness about the possibilities of working with non-judgmental bodily movement are central aspects of improving adolescents’ mental health. Based on the effects of the intervention and the girls’ own experiences, this thesis demonstrated that dance has the potential to prevent and to act as a complementary treatment for internalizing problems in adolescent girls.
Implementation in Sweden

The publication of paper I in JAMA Pediatrics in 2013 elicited global media attention. In Sweden, several municipalities have exhibited high levels of interest in learning more about the “Dance Project”. To meet this interest and to inform others of the key aspects and ethical dimensions that are important for this target group, the research team offered a two-day course. To date, 60 new dance instructors have participated in this course (all medical or educational professionals). Thus, the “Dance Project” has been implemented in several regions in Sweden, and a selection of the municipalities is under scientific evaluation (Malmö, Jönköping, Karlskoga, Örebro, Haparanda, Boden). Both qualitative and quantitative studies will be conducted on two levels: 1) the implementation process (i.e., health economic aspects as well as what works, for whom and under what circumstances during implementation); and 2) the individual health effects and experiences. Long-term follow-up will be conducted. These upcoming studies will strengthen the external validation of the present current study.

Additionally, three municipalities have chosen to implement the dance intervention for adolescent health on a regular basis and with yearly funding. 1) In Jönköping (five municipalities: Jönköping, Tranås, Eksjö, Habo, and Nässjö), the “Dansa utan krav” (“Dance without demands”) program has been financed since 2014 by a collaboration between Region Jönköping County, study covenant (studie förbund) and a non-profit organization; 2) In Örebro (one municipality: Örebro), the “Bara Dansa” (“Just Dance”) program has been funded annually since 2015 by the department for children and education; and 3) in Karlskoga (two municipalities: Karlskoga and Degerfors), the “Dansa, Pausa” (“Dance, Pause”) implementation will constitute a part of the Culture School’s regular education program beginning in the fall of 2016. Taken together, the “Dance Project” has become an example of a study that reduces the gap between research and practice.

Perspectives for Future Research

Further research on interventions is needed to investigate the prevention and treatment of internalizing problems among adolescents. I propose the following avenues:

- Studies including several intervention arms would provide deeper insight and facilitate the development of future interventions. For example, comparing the current dance intervention with other PA
intervention, or, comparing the current dance intervention design with a sedentary group activity would help to distinguish between the impacts of exercise and those of group interaction.

- Quantitative and qualitative dance intervention studies targeting boys and mixed groups (girls and boys) with somatic and mental health problems would provide guidance for the future development of resource-strengthening interventions for both sexes. A pilot study with subsequent evaluations and focus group interviews could contribute to the planning phase.

- Studies on dance intervention as a treatment on an indicated level (i.e., by primary healthcare or CAP) would be valuable. Dance is likely to constitute a suitable add-on intervention to existing psychological treatment, and a combination treatment could be investigated and compared with psychological treatment alone. The content of such a future combined intervention should preferably be designed collaboratively and span professional boundaries.

- Studies of dance interventions that target younger girls and children with internalizing problems would broaden the range of available data and address the possibilities of early interaction.

- Evaluation techniques as video-interpretation technique (detects non-verbal body-signals and predicts stress-related signals) and/or self-figure drawing (reflects non-verbal issues that are linked to inner senses and well-being) would be interesting to assess in a dance intervention for adolescents with internalizing problems, depression, and/or eating disorders, especially when verbal communication skills are limited.

- Regarding biological markers, high levels of cortisol have been associated with symptoms of stress and poor SRH, thus, examining variations in saliva cortisol levels could contribute to further research in this area.

- Extensive long-term follow-ups (i.e., 5 years) would help establish data on the sustainability of health effects and for health economic evaluations.

- The lack of health economic evaluations must be addressed, both in general and for the specific area of adolescent health. Health economic comparisons with other preventive approaches or treatments and other modalities would be useful.
• For the evaluation of future dance interventions, self-assessment scales validated in a Swedish population should be considered.
• Future research might also consider evaluating different aspects of behavioral change for this target group to facilitate adherence to dance interventions. If a girl has reported an interest in participating in a dance intervention, what support does she need to lower her possible barriers for regular high adherence? What is needed for her to overcome possible self-doubts and take action? Beyond ensuring that the current activity is suitable and attractive, what concrete support would facilitate her participation? For example, evidence exists regarding the importance of preparatory behaviors (positioned between planning and the target behavior) and the value of breaking goals into smaller, feasible sub-goals \(^1\). How can we apply that knowledge? Can we offer a combination of behavioral strategy support and intervention? How can we develop collaborations with school health services?

This study has generated new research
• The ”Implementationstudy” funded by “FORSS” (Forskningsrådet i Sydöstra Sverige) with the aim to study what works, for whom and under which conditions and settings when the dance intervention project is implemented. The study is performed in two levels; 1) staff and organization and 2) the study group, young girls with internalizing problems. A health economic evaluation is included.
• “Just-in-time – Intervention with dance and yoga for girls with recurrent abdominal pain” (funded by Nyckelfonden Örebro County Council). The aim of this study is to evaluate the effects of an intervention for girls, 9 to 12 years old, with recurrent abdominal pain. They will be randomized to intervention with weekly dance- and yoga class for 8 months or control group with standard treatment.
• “Health Economics Analyses of Intervention Targeting Internalizing Problems in Children and Adolescents: Translating Evidence into Policy and Practice” funded by the Swedish National Research agency (Vetenskapsrådet). The aim of this retrospective study is to investigate the effectiveness, cost and cost effectiveness of promotion interventions that would optimally reduce the burden of internalizing mental health problems in children and adolescents in Sweden.
SAMMANFATTNING PÅ SVENSKA

Dansintervention för tonårsflickor med återkommande internaliserade problem. Effekter och erfarenheter.

Förekomsten av internaliserade problem såsom somatiska symptom och psykisk ohälsa har ökat bland ungdomar, särskilt bland flickor. Detta anses allvarligt eftersom forskning visar att denna typ av ohälsa i tonåren inte bara orsakar mycket lidande, utan också ökar risken för psykisk sjukdom senare i livet. Svenska studier visar att nedsämnadhet, huvudvärk och magvärk förekommer mer än dubbelt så ofta bland flickor som bland pojkar i tonåren. Flickor har högre risk för depression, högre medicinanvändning, samt upplever oftare känslor av skuld och misslyckande jämfört med pojkar. Ur ett samhällsperspektiv utgör den psykiska ohälsan en stor kostnad.


Totalt ingick 112 flickor i analyserna, 59 i dansgrupp och 53 i kontrollgrupp. Data samlades in med enkät vid baslinje samt efter 8, 12 och 20
månader. Fyra delarbeten är genomförda. Det första (I) och andra (II) delarbetet undersökte följande variabler: självskattad hälsa, förekomst av somatiska symptomer, mental ohälsa (emotionell stress), användning av smärtstillande medicin (analgetiska), samt för dansgruppen; närvaro och generell upplevelse av interventionen. Resultaten visar att efter avslutad intervention (vid 12 m.) hade den självskattade hälsan ökat mer i dansgrupp än kontrollgrupp \( (p = .02) \), samt följande besvär hade minskat mer i dansgrupp än kontrollgrupp: somatiska besvär \( (p = .021) \), stressrelaterad mental ohälsa \( (p = .023) \) och medicinanvändning \( (p = .020) \). Närvarofrekvensen i dansgruppen visar att 67 % av flickorna deltog 50-100 % av alla danstillfällen och 92 % skattade interventionen som positiv.

I det tredje delarbetet (III), en kvalitativ intervjustudie, berättade ett strategiskt urval av 24 flickor om sina upplevelser av deltagande i dansinterventionen. Innehållsanalys tillämpades och utmynnade i fem generiska kategorier: ”en fristad från stress”, ”stödjande gemenskap”, ”glädje och energi”, ”ökad tillskott på sin förmåga och stärkt självmédämåla”, samt ”dans som känslomässigt uttryck”. Huvudkategorin, den centrala förståelsen av flickornas upplevelser, summerades som “erfar kroppsförankrad självtillit som öppnar nya dörrar”.

Det fjärde delarbetet (IV), en hälsokostnadsekonomin utvärdering, jämförde dansinterventionen som komplement till skolhälsovård med endast skolhälsovård. Analysen visade att dansinterventionen kostade 27 600 SEK (3830 USD) per vunnen QALY (kvalitetsjusterade levnadsår), vilket anses vara kostnadseffektivt. Kostnadseffektiviteten berodde på vinster i livskvalitet \( (p = .04) \) räknat i (QALY vinst = 0.1), på minskat antal skolsköterskebesök (dansgruppen minskade besöken med 54 % och kontrollgrupp med 25 %), samt på att dansinterventionen var en förhållandevis billig insats. Vid långtidsuppföljningen rapporterade 92 % av flickorna i interventionsgruppen och 57 % i kontrollgruppen att de var engagerade i någon form av fysisk aktivitet.

Resultaten i denna avhandling visar att denna intervention med dans två ggr/v i två terminer genererade positiva hälsoeffekter för tonårsflickor med internaliserad problem, samt visade sig även vara en kostnadseffektiv insats. Prestationerfri atmosfär och stödjande gemenskap visade sig ha särskilt stor betydelse för deltagarna, dansen sägs som en fristad från högt satta individuella och sociokulturella upplevda krav. Sammantaget tillför denna avhandling ny kunskap som kan vara värdefull i utformandet av framtida interventioner riktade till denna målgrupp.
ACKNOWLEDGEMENTS

First and foremost, I would like to thank all the girls who participated in this study. Each one of you rocks my world. You came, you contributed, you made this happen, and you made a difference. Through your dance and your generously shared stories, you inspired the whole world. Without you, this work would have been impossible.

I also would like to thank the school nurses in Örebro, particularly Lena Ekholm, not only for assistance with recruitment but also for answering questions, raising questions and turning stones. You are the girls’ loyal warriors in everyday school life.

To Professor Margareta Möller, my main supervisor and compass, I am deeply grateful for being able to work with you and to have had the opportunity to be led by your expertise and knowledge. You have always been supportive and never far from a smile. You have a way of setting things in motion, and your brilliant idea was the starting point for this intervention.

To my co-supervisor Lars Hagberg: Thank you for your support from the very beginning, your knowledge in the field of my research and your never-ending positive attitude. Our common ground in our passion for physical activity facilitated this work several times.

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Thanks to Region Örebro County for supporting me financially during my years as a doctoral student.

Thanks to the Medical Library of Örebro University for always providing fantastic service and to Margareta Landin for your reference expertise. Special thanks to the gyms ‘Njoy’ and ‘Actic Slottsgatan’ Örebro for supporting the dance project with local facilities.

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Thanks to my mentor and friend Kia Bringert for supporting me in dance research and for being such a wise and warm-hearted role model. I am sorry we did not get the chance to work together as we planned, but I am sure you are looking down from heaven smiling. Your soul is everywhere in this thesis and your words are still in me.

Thanks to my dance instructor colleagues and beautiful minds Frida Ekholm, Agnes Steiner and Elin Duberg (my sister) for your enthusiasm and priceless contributions to this research.

To my other sisters; Cecilia Duberg, thank you for inspiring discussions and for guidance. You have challenged me from the beginning of this project with your questions, which have improved this thesis. Karolina Duberg, thank you for continuously bringing music to my world; you know how much that means to me. Thanks to my father Kjell Duberg and my uncle Professor Roland Duberg for your wise guidance and for cheering me on.

I am most grateful to my mother Astrid Duberg; you made this doctoral journey possible with your warmhearted support, not the least of which was babysitting. You recharge me when I am down, and you have a way of always fixing things.

To my beautiful and caring husband Christopher D. Johansson: We did it! Thank you for always lifting me. I love you. ∞.

To my daughters Ida (11 years old) and Vilma (9 years old): You are my shining stars. Thank you for inspiring me and always reminding me what is important in life. I love you ∞.

To my son Vincent (1 year old): Your magic spontaneous dance is what keeps this world going around. Don’t ever stop. I love you ∞.
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APPENDIX 1

Questionnaire
ENKÄT

Intervention med dans för flickor 13-18 år som återkommande söker hjälp hos skolhälsovården i Örebro kommun. En randomiserad, kontrollerad studie.

1. Namn:_______________________________________________(texta)
Adress:______________________________________________________
______________________________________________________
Tfn bostad:___________________________________________________
Mobiltelefonnr:_______________________________________________
Årskurs + skola_______________________________________________
Om annan utbildning, ange vilken______________________________
_____________________________________________________________
Om ej skola eller utbildning, ange sysselsättning___________________
_____________________________________________________________
E-post:_______________________________________________________
Datum:________________________________________
FRÅGOR OM DIG SJÄLV OCH DIN FAMILJ

2. Personnummer: ______________________

3. Hur bor du?
- □ I hyreslägenhet
- □ I bostadsrättslägenhet/andelslägenhet
- □ I radhus eller kedjehus
- □ I villa
- □ Annat boende

4. Vem bor du tillsammans med?
(Sätt kryss i de rutor som stämmer för dig)
- □ Mamma
- □ Pappa
- □ Ibland mamma, ibland pappa
- □ Styvmamma (pappas nya fru eller sambo)
- □ Styvpappa (mammas nya man eller sambo)
- □ Ett eller flera syskon
- □ Bor ensam
- □ Med pojk-/flickvän
- □ Någon annan vuxen
- □ Eget barn

5. Var är du/dina föräldrar födda?
(Sätt ett kryss på varje rad)

<table>
<thead>
<tr>
<th></th>
<th>Sverige</th>
<th>Övriga Norden</th>
<th>Övriga Europa</th>
<th>Utanför Europa</th>
</tr>
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<tbody>
<tr>
<td>Du själv</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Pappa</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Mamma</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

6. Vad gör din pappa?
- □ Arbetar
- □ Är långtidssjukskriven/sjukpensionär
- □ Arbetslös
- □ Studerar
- □ Är barnledig/hemman
- □ Annat

7. Vad gör din mamma?
- □ Arbetar
- □ Är långtidssjukskriven/sjukpensionär
- □ Arbetslös
- □ Studerar
- □ Är barnledig/hemman
- □ Annat

8. Har du några syskon? (Även bonus-syskon räknas)
- □ Ja □ Antal __________
- □ Nej

DIN HÄLSA

9. Hur mår du rent allmänt?
- □ Mycket bra
- □ Bra
- □ Varken bra eller dåligt
- □ Dåligt
- □ Mycket dåligt
10. Hur lång är du?  
(OBS! Ange längden i hela centimeter.)

11. Hur mycket väger du? 
(OBS! Ange vikten i hela kilo.)

12. Hur ofta har du under de senaste 3 månaderna haft följande besvär? (Sätt ett kryss på varje rad)

<table>
<thead>
<tr>
<th>Besvär</th>
<th>Aldrig</th>
<th>Sällan</th>
<th>Ibland</th>
<th>Ofta</th>
<th>Alltid</th>
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<tbody>
<tr>
<td>Huvudvärk (ej migrän)</td>
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<tr>
<td>Migrän</td>
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<td>Önt i magen</td>
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<td>Yrsel/yr</td>
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<tr>
<td>Trötthet</td>
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<tr>
<td>Värk i axlar/skuldror/nacke</td>
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<tr>
<td>Värk i rygg/höfter</td>
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<tr>
<td>Illamående</td>
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<tr>
<td>Andra besvär</td>
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<tr>
<td>Nämligen</td>
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13. Har du behövt ta medicin för dessa besvär? 
Mot vad? __________________________
Vilken medicin? ____________________
Hur ofta? _________________________
Hur mycket? _______________________

14. Hur ofta har du under de senaste 3 månaderna känt dig? (Sätt ett kryss på varje rad)

<table>
<thead>
<tr>
<th>Besvär</th>
<th>Aldrig</th>
<th>Sällan</th>
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<td>Stressad</td>
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<td>Nedstämd</td>
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<td>Pigg och energisk</td>
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<td>Irriterad</td>
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<tr>
<td>Lycklig</td>
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<td>Avslappnad o lugn</td>
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<td>Ha kontroll</td>
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<tr>
<td>Rastlös</td>
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<tr>
<td>Maktlös</td>
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</table>
15. Hur ofta har du under de senaste 3 månaderna haft följande besvär? (Sätt ett kryss på varje rad)

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<th>Aldrig</th>
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<th>Ibland</th>
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<td>Svårt att somna</td>
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<td>Orolig sömn</td>
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<td>Vaknat på natten</td>
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<td>Mardrömmar</td>
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16. Hur många timmar brukar du sova per natt under en vanlig skolvecka (söndag natt till torsdag natt)?

17. Hur många timmar brukar du sova per natt under helgen (fredag natt och lördag natt)?

18. Vem pratar du med när du är ledsen eller har problem?

    - Ingen att prata med
    - Kompis
    - Någon av föräldrarna
    - Syskon
    - Någon vuxen på skolan
    - Annan vuxen

19. Har du en känsla av att du inte riktigt bryr dig om vad som händer runt omkring dig?

<table>
<thead>
<tr>
<th></th>
<th>Mycket sällan eller aldrig</th>
<th>Mycket ofta</th>
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<tbody>
<tr>
<td></td>
<td>1  2  3  4  5  6  7</td>
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20. Har det hänt att du blev överraskad av beteendet hos personer som du trodde du kände väl?

<table>
<thead>
<tr>
<th></th>
<th>Har aldrig hänt</th>
<th>Har hänt ofta</th>
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<td></td>
<td>1  2  3  4  5</td>
<td>6  7</td>
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21. Har det hänt att människor som du litade på har gjort dig besviken?

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<thead>
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<th></th>
<th>Har aldrig hänt</th>
<th>Har hänt ofta</th>
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<td>1  2  3  4  5</td>
<td>6  7</td>
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22. Hitills har ditt liv...

<table>
<thead>
<tr>
<th></th>
<th>helt saknat mål och mening</th>
<th>genomgående haft mål och mening</th>
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<td>1  2  3  4  5  6  7</td>
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23. Känner du dig orättvist behandlad?

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<th>Mycket ofta</th>
<th>Mycket sällan/ aldrig</th>
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24. Har du en känsla av att du befinner dig i en obekant situation och inte vet vad du ska göra?

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<th>Mycket ofta</th>
<th>Mycket sällan/ aldrig</th>
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25. Är dina dagliga sysslor en källa till...

<table>
<thead>
<tr>
<th></th>
<th>glädje och djup tillfredsställelse</th>
<th>smärta och leda</th>
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26. Har du mycket motstridiga känslor och tankar?

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27. Händer det att du har känslor inom dig som du helst inte vill känna?

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28. Även en människa med stark självkänsla kan ibland känna sig som en "olycksfågel". Hur ofta har du känt så?

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29. När något har hänt, har du vanligtvis funnit att...

<table>
<thead>
<tr>
<th>du över- eller undervärderade dess betydelse</th>
<th>du såg saken i dess rätta proportioner</th>
</tr>
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<tr>
<td>1</td>
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<tr>
<td>3</td>
<td>4</td>
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<tr>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Fritidsvanor

32. Hur ofta brukar du träna på din fritid, mer än 30 minuter, så att du blir andfådd/svettas?

- Varje dag
- 4 – 6 gånger i veckan
- 2 – 3 gånger i veckan
- En gång i veckan
- 1 – 3 gånger i månaden
- Mindre än en gång i månaden
- Aldrig

33. Hur många timmar per vecka sitter du i genomsnitt framför datorn?

- Använder ej dator
- Mellan 1 – 5 timmar
- Mellan 6 – 10 timmar
- Mellan 11 – 15 timmar
- Mer än 15 timmar
34. Hur ofta brukar du göra följande? *(Sätt ett kryss för det som passar bäst för varje rad)*

<table>
<thead>
<tr>
<th></th>
<th>Aldrig</th>
<th>Någon eller några ggr/år</th>
<th>Några ggr/mån</th>
<th>Minst en gång/vecka</th>
<th>Nästan varje dag</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cykla eller gå till skolan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cykla eller gå till dina fritidsaktiviteter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Äta pizza, hamburgare, pommes frites, kebab eller annan snabbmat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Äta/dricka godis, chips, ostbågar, läsk eller liknande</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Äta frukt, grönsaker eller bär</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Köra runt på moped eller motorcykel bara på kul</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spela på spelautomater (den sort man kan vinna pengar på)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spela data- eller TV-spel</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Idrotta eller motionera</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Läsa böcker för nöjes skull (räkna inte skolböcker)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå ut med kompisar på stan/centrum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå ut på disco, kafé, etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annan hobby (spela instrument, sjunga, måla, skriva etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delta i spel eller lotteri om pengar (trav, triss, måltips etc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå på fritidsgården</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå på biblioteket</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå till kyrka, moské, synagoga eller liknande</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå på idrottsvenemang, som åskådare</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vara ute i naturen, skog, sjö eller grönområden</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå på musikarrangemang</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gå på museum/utställningar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ligga hemma och slappa eller sova (förutom natttid)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vara ensam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Var hemma med/hos kompisar på kvällen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**MATVANOR**

35. Hur ofta äter du följande måltider under en vanlig vecka? (Sätt ett kryss på varje rad)

<table>
<thead>
<tr>
<th>Måltid</th>
<th>Varje dag</th>
<th>4-6 dagar</th>
<th>1-3 dagar</th>
<th>Sällan/ aldrig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frukost</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lagad lunch</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lagad mat på kvällen</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

36. Hur många dagar i veckan äter du lunch i skolan?

- □ 4 – 5 dagar
- □ 1- 3 dagar
- □ Mer sällan eller aldrig

**SKOLAN**

(Om du har slutat skolan gå vidare till fråga 48)

37. Om dig och skolan

*Hur stämmer dessa påståenden på dig?*

<table>
<thead>
<tr>
<th>Påstående</th>
<th>Stämmer precis</th>
<th>Stämmer ganska bra</th>
<th>Stämmer till viss del</th>
<th>Stämmer ganska dåligt</th>
<th>Stämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag gillar att vara i skolan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skolarbetet är intressant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag är gärna med och diskuterar på lektionerna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag har kamrater i skolan som vill vara med mig</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Om skoluppgifterna är svåra kan jag få hjälp av mina föräldrar</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Om jag har problem i skolan är mina föräldrar beredda att hjälpa mig</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag vågar ställa frågor till lärarna inför klassen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mina föräldrar uppmantrar mig att göra bra ifrån mig i skolan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>På min skola behöver ingen känna sig rädd eller hotad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

38. Elevernas medverkan

*Hur ofta stämmer detta?*

<table>
<thead>
<tr>
<th>Påstående</th>
<th>Nästan aldrig</th>
<th>Ganska sällan</th>
<th>Ibland</th>
<th>Ganska ofta</th>
<th>Nästan alltid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vi elever får vara med och bestämma vilka regler som ska gälla på skolan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vi får hjälp att få sköta om skolan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eleverna får vara med och påverka det man gör i skolan</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lärarna planerar tillsammans med oss elever</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
39. Dina lärare

_Hur tycker du att dessa påståenden stämmer in på de lärare du har?_

<table>
<thead>
<tr>
<th>Påstående</th>
<th>Stämmer på nästan alla lärare</th>
<th>Stämmer på mer än hälften av lärarna</th>
<th>Stämmer på hälften av lärarna</th>
<th>Stämmer på mindre än hälften av läraren</th>
<th>Stämmer nästan inte på någon lärare</th>
</tr>
</thead>
<tbody>
<tr>
<td>De jobbar för att klasser och grupper ska fungera bra ihop</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De anstränger sig för att ingen elev ska bli utfrusen och mobbad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De är bra på att skapa arbetsro under lektionerna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De är bra på att förklara sådant vi ska lära oss</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De är bra på att få oss att tänka själv</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De ger mig användbara synpunkter på mitt arbete</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>De anstränger sig för att jag ska klara skoluppgifterna</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

40. Hur trivs du i skolan?

- Mycket bra
- Ganska bra
- “Så där”
- Ganska dåligt
- Mycket dåligt

41. Hur många timmar läser du läxor i genomsnitt per vecka under terminerna?

- Läser ej läxor
- Mellan 1 – 5 timmar
- 6 – 10 timmar
- 11 – 15 timmar
- Mer än 15 timmar

42. Brukar du skolka?

- Nej, aldrig
- Ja, någon gång under terminen
- Ja, en gång i månaden
- Ja, 2 – 3 gånger i månaden
- Ja, en gång i veckan
- Ja, flera gånger i veckan

43. Har du icke godkänt i några ämnen?

- Nej, inte i något ämne
- Ja, 1 – 2 ämnen
- Ja, 3 – 4 ämnen
- Ja, 5 eller fler ämnen

44. Har du under den här terminen blivit slagen, sparkad eller utsatt för annat våld i skolan?

- Nej
- Ja, en gång
- Ja, flera gånger
45. Har du den här terminen själv slagit, sparkat eller utsatt någon annan för våld i skolan?

☐ Nej
☐ Ja, en gång
☐ Ja, flera gånger

46. Har du blivit mobbad av någon/några av dina skolkamrater den här terminen?

☐ Nej
☐ Någon gång under terminen
☐ Någon gång i månaden
☐ Någon gång i veckan
☐ I stort sett varje dag

47. Har du blivit kränkt eller illa behandlad av någon vuxen på skolan den här terminen?

☐ Nej
☐ Ja, en gång
☐ Ja, flera gånger

48. Vilken beskrivning passar bäst in på dig som person?

☐ Glad och intresserad av livet
☐ Delvis glad
☐ Delvis olycklig
☐ Mycket olycklig
☐ Så olycklig att livet inte är värt att leva

49. Vilken beskrivning passar bäst in på din smärta och/eller ditt obehag?

☐ Ingen smärta eller obehag
☐ Mild eller måttlig smärta; inga förhinder för aktiviteter
☐ Måttlig smärta som förhindrar några aktiviteter
☐ Måttlig eller kraftig smärta som förhindrar vissa aktiviteter
☐ Kraftig smärta som förhindrar vissa aktiviteter

50. Hur skulle du beskriva din uppfattningsförmåga?

☐ Kommer ihåg det mesta; tänker klart och kan lösa vardagliga problem
☐ Kommer ihåg det mesta; vissa svårigheter med tankeförmåga och då det gäller att lösa vardagliga problem
☐ Något glömsk; tänker klart och kan lösa vardagliga problem
☐ Något glömsk; vissa svårigheter med tankeförmåga och då det gäller att lösa vardagliga problem
☐ Mycket glömsk; stora svårigheter med tankeförmåga och då det gäller att lösa vardagliga problem
☐ Oförmögen att komma ihåg; oförmögen att tänka och lösa vardagliga problem

51. Har du deltagit i någon dansundervisning eller på annat sätt dansat de senaste tre åren?

☐ Ja
☐ Nej


| enbart negativ | mest negativ | neutral | mest positiv | enbart positiv |
53. När jag dansar… Håller inte alls med (1)…………………Håller verkligen med (5)

<table>
<thead>
<tr>
<th>Jag trivs</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag känner mig uttråkad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag tycker inte om det</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag tycker det är roligt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det är inte alls roligt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det ger mig energi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det gör mig deprimerad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det är mycket behagligt</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min kropp känns bra</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag får ut någonting av det</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det är väldigt spännande</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det är frustrerande för mig</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det är inte alls intressant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det ger mig en stark känsla av framgång</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Det känns bra</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jag känner som om jag hellre skulle göra något annat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 54. DEN SENASTE VECKAN HAR JAG:

<table>
<thead>
<tr>
<th></th>
<th>Inte alls</th>
<th>Enstaka gånger</th>
<th>Då och då</th>
<th>Ofta</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Oroat mig för sådant som jag inte brukat oroat mig för</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>2.</td>
<td>Inte haft någon matlust, helt enkelt inte varit hungrig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3.</td>
<td>Inte kunnat känna mig glad även om min familj eller mina vänner försökt pigga upp mig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>4.</td>
<td>Tyckt att jag är lika bra som alla andra</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>5.</td>
<td>Inte kunnat koncentrera mig på det jag håller på med</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>6.</td>
<td>Känt mig ”nere” och olycklig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>7.</td>
<td>Känt mig för trött för att orka göra något</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>8.</td>
<td>Känt det som att det kommer bli bra för mig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>9.</td>
<td>Tyckt att sådant jag i vanliga fall klarar inte har gått bra för mig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>10.</td>
<td>Känt mig rädd</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>11.</td>
<td>Inte sovit så bra som jag brukar</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>12.</td>
<td>Känt mig lycklig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>13.</td>
<td>Varit mera tyst och tillbakadragen än vanligt</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>14.</td>
<td>Känt mig ensam och utan vänner</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>15.</td>
<td>Känt det som om kompisar inte gillar mig och inte vill vara med mig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>16.</td>
<td>Haft det bra</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>17.</td>
<td>Känt det som att jag vill gråta</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>18.</td>
<td>Känt mig ledsen</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>19.</td>
<td>Trott att andra inte tycker om mig</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>20.</td>
<td>Haft svårt att komma igång med det jag skall göra</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
55. Jag fick information om dansprojektet via:
☐ Skolsköterskan direkt
☐ Anslag på skolan
☐ Information på föräldramöte
☐ Information i klassrummet
☐ En kompis
☐ En lärare
☐ Annat sätt, nämligen:

56. Jag godkänner att skolsköterskan på min skola får kännedom om mitt deltagande i dansprojektet.
☐ Ja
☐ Nej

57. Jag godkänner att skolsköterskan på min skola kan berätta för projektledningsgruppen hur många gånger jag besökt skolhälsovården förra terminen.
☐ Ja
☐ Nej

58. Antal gånger jag besökt skolhälsovården senaste terminen:

a) Skolsköterska: _____ gånger
b) Skolkurator: _____ gånger
c) Skolpsykolog: _____ gånger

Ev. kommentar:_____________________________________________________________
___________________________________________________________________________
59. Antal gånger jag besökt vårdecental eller annan vårdgivare senaste terminen

   a) Läkare / Sjuksköter: _____ gånger
   b) Kurator / Psykolog: _____ gånger
   c) Sjukgymnast: _____ gånger

Ev. kommentar:_____________________________________________________________
_________________________________________________________________________

60. Har du fått mens?

☐ Nej (om nej=hoppa över fråga 61)
☐ Ja

61. Vid vilken ålder fick du din första mens?

_____________________________________________________

62. Använder du preventivmedel?

☐ Nej (om nej=hoppa över fråga 63, 64 och 65)
☐ Ja

63. Om JA= vilket preventivmedel? (Sätt ett eller flera kryss)

☐ P-pillar
   Vilken sort? ______________________________________________________________

☐ Mini-piller
   Vilken sort? ______________________________________________________________
□ Kondom
□ ”Dagen efter piller”
□ Spermiedödande glidmedel/P-skum
□ Pessar
□ P-stav
□ Spiral
□ Annat: _________________________________________

64. Om du använder p-piller eller mini-piller, hur länge har du använt det?
________________________________________________________

________________________________________________________
________________________________________________________
________________________________________________________

66. Vilka fritidsaktiviteter har du ägnat åt under senasteterminen?
(Om du deltagit i dansprojektet så skriv det.)
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________
________________________________________________________

67. Hur många gånger i veckan?
Frågeformulär

Detta frågeformulär handlar om stress i skolan. Ifyllandet sker individuellt och utan påverkan från andra.

Namn ____________________________ Ålder _____

<table>
<thead>
<tr>
<th></th>
<th>Aldrig</th>
<th>Ibland</th>
<th>Ofta</th>
<th>Mycket ofta</th>
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</thead>
<tbody>
<tr>
<td>1. Jag blir arg</td>
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<td>2. Jag har huvudvärk</td>
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<td>3. Jag tycker det är roligt</td>
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<tr>
<td>att gå till skolan</td>
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<tr>
<td>4. Jag känner mig lugn och glad</td>
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<td>5. Jag har ont i magen</td>
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<td>6. Jag känner mig ensam</td>
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<td>7. Jag blir ledsen</td>
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<td>8. Jag tycker om att vara i skolan</td>
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<td>9. Kamraterna retar mig</td>
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<td>Uppgift</td>
<td>Svaralternativ</td>
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<tr>
<td>10. Jag har lätt att somna på kvällarna</td>
<td>Aldrig</td>
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<td>Ofta</td>
<td>Mycket ofta</td>
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<tr>
<td>11. Jag känner mig lugn</td>
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<td>12. Det brukar bli som jag tänkt mig</td>
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<td>13. Jag känner mig glad</td>
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<td>14. När jag är glad visar jag det</td>
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<td>15. Det händer att jag inte hinner med det jag ska</td>
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<td>16. När det är jobbigt hjälper det att vara med kamraterna</td>
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<tr>
<td>17. När jag är ledsen visar jag det</td>
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<td>18. Det händer att jag inte klarar av det jag ska</td>
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<tr>
<td>19. När det är jobbigt finns det någon vuxen jag kan prata med</td>
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<td>20. När någon är dum mot mig så säger jag ifrån</td>
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<tr>
<td>21. Det går lätt att koncentrera sig på lektionerna</td>
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</table>
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