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Content

Foreword

The **Swedish Journal of Sport Research** is an open access journal publishing original articles on mainly pedagogical, psychological and sociological aspects of sport, but also educational, historical, and philosophical aspects. The aim of the journal is to be an international forum for sport researchers.

I would like to thank the authors for choosing the Swedish Journal of Sport Research for publication of their studies. I would also like to thank the reviewers for their valuable comments and suggestions to improve the quality of the manuscripts in the rewiewing process.

Erwin Apitzsch
Editor

Towards a New Logic of Sport Practice for Children

A Case Study of a "Sport for All" School Programme in Sweden

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Abstract: The purpose of this article is to study children and engaged adults' experiences of participating in a Sport for All Programme in school (SAP). Fifteen individual interviews were conducted with one programme manager, three schoolteachers, two sport club leaders, and nine children (five girls and four boys aged 9-10). Bourdieu's (1990) as well as Lave and Wenger's (1991) theoretical models were used as the analytic tools to study the SAP. The analysis reveals that the organization and the practice of the activities are noticeably related to conventionally organized sport. The analysis also shows that the SAP is a new way of organizing and practicing children's sport – with its own logic. The absence of organized competition, the less intensive activities, the greater flexibility and variation in the SAP appear to challenge the conscious and unconscious idea of the meaning and function of competitive sport, especially in children's sport. Thus, the SAP concept calls for a new way of approaching children's sport, and new demands on those who organize and lead the activities.

Key words: Interviews, School sport, After-school care, Sport clubs, Extra-curricular physical activity

Introduction

According to the Swedish Sports Confederation (RF[1]), the "Sport for All" concept "Sportis" offers a chance for physically inactive young people to find their own sport or sports. It is specially designed for children under the age of twelve. The purpose of the "Sport for All" policy is to give children an opportunity to try different sports, with a focus on play and motor learning rather than organized competition. The activities must be accessible and provided in the local environment, preferably within or close by the school facilities, according to RF's published pamphlet "Sportis –idrottsskola med barn i centrum" [Child-Centered After-School Sports]. The Sport for All Programme, provided in and out of school hours, resembles what has been termed 'Extra-curricular PE'. Penney and Harris (1997) define "Extra-curricular PE" as "the provision of activities outside of the formal PE curriculum most often after school and at lunch times, but also in some schools, at weekends and/or before school" (p. 42). De Martelaer and Theeboom (2006) define it as "a collective term for play, sport and movement not compulsory for pupils but offered within the institutional framework of school with or without other providers (sports clubs, municipalities, private organisations)" (p. 662). The information presented in this article is part of a larger ongoing research project on the sport activities offered to children through the implementation of the "Sport for All" initiative. The purpose of this article is to study children and engaged adults' (teachers, sport leaders and management) experiences of participating in a Sport for All Programme in school (henceforth referred to as the SAP).

Young people's physical activity in developed countries has become more institutionalized and occurs more in adult-controlled and organized schemes, instead of being informal, child-controlled activities (Coakley, 2009). In Sweden

[1] We use the Swedish abbreviation, RF (Riksidrottsförbundet) throughout the article

the sports movement attracts many children. Among children aged 10-12, two boys out of three and half of all girls are actively involved in organized sport (RF, 2011). The sporting movement is led by RF that organizes sport for the public. The objective of the sport movement in Sweden is to offer children and youth sport activities. RF declares in their policy that sport for children should focus on playing and learning based on children's rights, needs and abilities (RF, 2009). However, since the seventies, several critical issues concerning youth sport have been under debate in Sweden. Topics such as the children's rights, dropout, early specialisation, too much focus on competition, and parental pressure have been discussed (Augustsson, 2007; Davids, 2005; Engström, 2007; Peterson, 2008). Trondman (2005) argues that if the Swedish sport federation wants to grow, it cannot simply continue with a practice that merely benefits the logic of competitive sport. According to Stöckl, Strandbu, Solenes, Jörgensen, and Fransson (2010), RF points to the importance of new strategies. In order to continue to be an attractive leisure activity among young people, an extended role for the RF in the new millennium has been the development of partnerships between public day care institutions, schools, and sports clubs for creating more sport establishments. From a European perspective, Hardman (2008) discusses the need for a wider community-based partnership: "bridges and pathways to community provision need to be constructed, especially to stimulate young people to participate in physical activity during their leisure time" (p. 16). However, Hardman assumes that this work cannot be done exclusively by PE teachers without the collaboration of other professionals and volunteers. Not all volunteers, Hardman continues, have formal training for working with children and youth. Furthermore, MacDonald (2002) sees a risk in bringing sport club leaders to the educational setting, as they may be more interested in recruiting club members rather than providing sport activities to all pupils.

Given this background, previously conducted studies (e.g., Fahlén & Karp, 2010; Flintoff, 2008; Penney & Harris, 1997; Reid, 2009; Säfenbom, Röe, Söholt, & Kolle, 2009) have also discussed the tension between the conventional sport club practices and "Sport for All" initiatives. These studies argue that the concept of "Sport for All" activities attracts children who are already active in sport clubs. The same studies also show that the activities offered resemble conventional, organized sport. Skille (2004) explains these results as a clash of interests which occurs when organisations that primarily provide traditional organized competitive sport are required to provide activities for non-members with preferences different from those represented in the arena for competitive organized sport.

Nevertheless, studies of a Norwegian sport for all programme, managed by well-established sport organisations (Norwegian Olympic Committee and Confederation of Sports), Skille (2007) and Skille and Waddington (2006) found that Sport for all programmes have the potential to break down social barriers and display a different meaning and function than conventional organized sport do.

Even though some studies have been undertaken to map out sport for all activities, there is a lack of studies investigating the logic of the sport for all concept, especially investigations with a starting point in a child perspective. This article focuses on SAP, which is an organized "Sport for All" activity, offered in cooperation between Swedish schools and sport clubs, targeting children aged 7-12.

Theoretical framework

Flintoff (2003) points out that the implementation of new ways to organize children's sports rely on how well individuals, at different levels, regulate and

adapt to policies in their specific contexts. One of many challenges within the context of Sport for All school programmes is to know how to plan, implement and reflect on how the practice should be presented. Therefore, the processes within the framework of the SAP context must be seen and interpreted as something other than the processes within the sport contexts entailed in PE-lessons or conventional organized sport (Light, 2011; Light & Nash, 2006; Rönholt, 2005). In childhood research the term "childing practices" is used (e.g., Alanen, 2001; Halldén, 2007), meaning that childhood is created in time and in different social practices by different agents. Such studies focus on how childhood is constructed both by actors in specific fields and by the children in these social practices. According to this perspective, studying the SAP as a unique "childing practice" makes it possible to identify the logic that is constructed in practice. In connection to this perspective, Lave and Wenger (1991) argue that the incorporation of knowledge and skills is a social process that occurs through participation in a specific context that they labeled "communities of practice" (e.g., a sport club).

Hence, a SAP can be seen as situated within the realm of children's sport. In line with this view Bourdieu's work can serve as an analytic tool. According to Bourdieu's theoretical framework, a child`s position and orientation within the culture of sport (In Bourdieu's terminology sport is seen as a social field) depends on how his or her resources (e.g., sport preferences and physical competence) are valued in that specific context. Bordieu terms these resources 'capital'. The organization and implementation of organized children and youth sport are largely governed by historical traditions of what type of symbolic capital that is recognized as valuable in social field of sport – a form of sport capital. In Bourdieu`s vocabulary the concept of "habitus" can be seen as embodied capital, for example, sport capital. Within this field of sport, children and youth sport constitute a subfield with its own discourse and set of beliefs. It

is the field's specific logic and practice that determines what is at stake and what kind of capital is required to participate in the game. This means that the position an agent takes in a field depends on the volume and structure of the capital she/he can mobilize.

Furthermore, fields are not only reproduced; agents can also use their capital to transform the field. For example, the transformation of sport practices is created through struggles about the legitimate way to practice sport. An example of this is the diverging opinions on whether children`s sport should offer play and recreation or produce elite athletes. Bourdieu claims that the transformation of the sport field is a change of available activities in relation to the changes of potential athlete's expectations, interest and values (Bourdieu, 1990; 1991; Bourdieu & Wacquant, 1992; Broady, 1990).

Bourdieu emphasizes, as do Lave & Wenger (1991), that meaning is created in practice and in the encounter between the individual and the environment. However, Bourdieu suggests more strongly that meaning is influenced by the individual's previously acquired assets. The same phenomena could have completely different meanings and functions depending on the assets of capital (Bourdieu & Wacquant, 1992; Broady, 1990; Light, 2011). The SAP can been seen as a "community of practice" in the field of sport where children`s sport and the sport for all concept are subfields within the field of sport. In the present study, Bourdieu's, as well as Lave and Wenger's, theoretical models are used as analytical tools, with a focus on the participants' agency in relation to the context of the logic of practice in the SAP

Method

The present study follows a case study design. This approach supports the formulation of ideas and questions in matters relating to new phenomena where

there is no clear structure or model (Kvale & Brinkman, 2009; Silverman, 2010; Yin, 2009). One SAP implemented in Sweden was selected for detailed study on the basis of the following criteria: (a) the programme should be well-established, (b) the programme should be founded by the "Sport Lift" and/or the "Handshake" projects to run a Sport for all – school programme, and (c) the activities were to be provided in an extra-curricular context.

In total, fifteen individual interviews were conducted with: the programme manager, three school teachers, two sport club leaders and nine children (five girls and four boys aged 9-10). The programme manager and three schoolteachers were selected on the grounds that they regularly worked with the programme. The nine children and the two sport leaders were randomly selected from a list of names. All the steps in the methodological design were carried out in accordance with the Swedish Research Council (Vetenskapsrådet, 2011), securing ethical issues, anonymity and the subjects' understanding of the agreement.

The interviews took place at a private setting. They were conducted face-to-face at each participant's workplace. The children were interviewed at school. An interview guide was used with open questions related to the domains connected to the informants' different roles in the SAP. The interview questions were developed through a pilot study. The interviewer has been working for many years in child sport related project and is well versed in interviewing informants in similar settings. The broad areas of inquiry, which provided the structure for the interviews, were interpretations of the SAP concept, content and experiences of the activities.

All interviews were audio recorded and the interviewer was taking notes during the sessions. The analysis process was concurrent with the interviews, which led

to some minor adjustments of the interview guide. The programme manager and the school teacher were interviewed first, and then the sport leaders, and finally the children. In order to analyse and conclude when saturation was reached the child interviews were also analysed concurrently. Saturation was reached after nine child interviews.

The interviews were then listened to, transcribed into a text format and lastly reread by the interviewer and two other researchers. The transcription was then read and re-read several times with a view to identifying the concepts and ideas of central importance to the respondents' experiences of the SAP (Kvale & Brinkman, 2009; Silverman, 2010) The next step involved grouping the units with similar meanings into themes, on the principle that the ideas in each theme are similar but distinct from the other themes of the data.. The analysis further involved finding a linkage between the themes. The four themes chosen here are: *the content, who is SAP for?, finding a sport*, and *leadership*. When nothing else is stated, the quotes in the result section are examples of perceptions shared by several informants.

Setting up the context

The selected SAP started in 2003, in a small town located in the western part of Sweden and is still running at the time of writing. The SAP sport activities are offered after school in conjunction with the after-school care services. Participation is on a voluntary basis, which means that the activities are not compulsory for all pupils (extra-curricular programme). Furthermore, it is possible to join the SAP even if a pupil is not registered in the after-school care service. The design of the activities involves inviting different sports clubs to present their respective sport to the children. Each participating club visits the SAP four times during a term. The activities take place in the school facilities.

However, some sports (e.g., sailing and alpine skiing) require transportation to different locations and in these cases the SAP arranges the transportation by bus.

The SAP is organized through a School Sport Club. The School Sport Club is governed by the School Sports Federation (SSF) and is a specialized sports federation for children's and youth sports in secondary and upper secondary schools. The SSF is part of RF and therefore eligible for funding from The "Sport Lift". The role of the teacher is to organize the SAP together with the manager and also to support the sport club leaders who are in charge of the sport activities.

Results

Drawing on the key features of Bourdieu (Bourdieu, 1990; 1991; Bourdieu & Wacquant, 1992; Broady, 1990) and Lave and Wenger (1991), mentioned in the theoretical section above, we present part of the interview data collected. The interview data are analysed and discussed below in integrated sections. Again, the four themes discussed here are: *the content, who is SAP for?, finding a sport, and leadership.*

The content

The first theme discussed is the activities. In the interview the manager pointed out that the SAP was designed to give children an opportunity to try different sports with an emphasis on play. He said:

> Primarily, we want to make the children physically active and make them familiar with different types of sports. And also to give them the opportunity to move and feel good, in a fun and playful way.

However, he also mentioned that sometimes there was a gap in the communication with the invited sports clubs regarding this matter and on these occasions the activities were presented as conventional competitive sports. According to the manager, this easily happens if the sports club leaders only get information to present "their" sport. The risk is, he said, that "there can be too much competition". This example shows that some sport leaders have resources highly valued in competitive sport. However, these resources, sport capital (Bourdieu & Wacquant, 1992), are not always compatible with the SAP. As Flintoff (2003) suggests, the implementation of sport for all programmes relies on the specific micro-milieu in every specific context, that is, where and how the actors meet and practice the sport. Flintoff further emphasises, that it is crucial that sport providers on every level are aware of the pedagogy the activities should be based on.

According to the interviewed children, however, the SAP can and does offer opportunities to try different sports with a focus on play, and the activities in the SAP differ from how sport is undertaken in conventionally organized sport. This was particularly expressed by children who were participating in both conventionally organized sports and the SAP. One boy, aged 9, said:

> In the SAP, we get to try more new sports, we have different activities. In my football club, we just train and play matches.

Another informant, a girl aged 10, agreed and said that conventionally organized sport has more focus on competition, which means more deliberate and advanced training. In her words:

> In the floorball club there is more competition and we have to do more complicated floorball practices in preparation for matches. In the SAP it is easier and more playful.

This suggests that when invited to assist in the SAP, the sports clubs seem to practice a different logic compared to their ordinary settings and practice in organized conventional sport. This is probably a result of the fact that club leaders in the SAP do not have to put emphasis on sport capital such as competition and results. Thus, sport for all activities does not necessarily offer "more of the same" as indicated by earlier research (e.g., Fahlén & Karp, 2010; Flintoff, 2008; Penney & Harris, 1997).

SAP – who is it for?

Another theme that emerged from the interviews was about which children the SAP management wishes to reach through this programme and as well as the group of children that actually participate in the SAP.

The managements' intention with the SAP was to offer sport activities to children who do not participate in conventionally organized sport. Even though, a few participants were involved in both the SAP and in conventionally organized sport, the teachers claimed that the SAP attracts the group of young people not active in organized conventional sport. As a teacher expressed it:

> We seem to have reached those that have no physical activity during their leisure time. And many of them return, so several have the SAP as their only activity for some years.

This indicates that children in possession of little or no conventionally organized sport capital found it valuable to join the programme.

Furthermore, in the interviews the manager and the teachers reflected on the need of the programme in areas where many families with low socioeconomic status live. The manager and the teachers argue that these groups of people lack both sport capital and economic capital. One teacher said:

> In this area it is impossible for most children [to get to sports clubs]. And there are hardly any clubs here. And most families do not have a car. So it is absolutely necessary to provide activities in the area nearby.

By providing SAP activities in these areas, the teachers claim that they have attracted the children living there.

Also, interviews with the management and teachers revealed that the SAP has low significance in areas with high socioeconomic status. They implied that most children are already participating in conventionally organized sports in these areas. A teacher pointed out that "for a majority in areas with high socioeconomic status the SAP is only one activity among many others". The programme manager agreed with this view, and he plans to target the resources in such a way that it gives most effect. This view supports the notion of the SAP as a "catalyst" for generating members to organized sport. But, in honouring the overall purpose of the SAP as a unique practice with other values and outcomes than conventionally organized sport (RF, n.d.), it can be important to give a broader group of children the opportunity to participate in the SAP.

Finding a sport

"Finding a sport" was a common theme in the informants' discussions about the SAP. This theme occurred both when the management described the aim of the SAP and when the children talked about why they choose to participate in the

SAP. There was consensus among the interviewed children that the SAP is an occasion for them to try different sports. The children claimed that they have learned several new sports in the SAP. Furthermore, for some of the children the SAP created an interest in taking up organized sport among non-sport participants. One boy, aged 9, made the following remark:

> I started in the SAP because I wanted to learn more sports. I've learned sports like karate and dance and I'm considering starting in athletics.

For this group of children, the SAP evidently contributed to children getting in touch with different sports. This was also an outspoken and conscious strategy from the SAP management. A teacher described the concept of the SAP in the following way:

> Yes, the concept has from the very beginning appealed to me. That clubs come and introduce their activities. Some sports you only have the opportunity to try on occasions like these. It has been odd sports like curling, sailing and alpine skiing, which are hard to be involved in if you don't have very dedicated parents.

Different views about the meaning of "finding a sport" were described in the interviews. Mainly two ideal types were highlighted: Should it be an occasion for testing different sports and having fun for the moment or should it lead into the sports clubs' ordinary activities? This result is interesting in relation to the core purpose of the SAP, which is in line with the first ideal type mentioned above (RF, n.d.).

Further, the analysis of the interviews showed that children and their families had problems in separating the SAP from school. This can be seen as a consequence of the fact that the SAP is strongly related to the school context

(Lave & Wenger, 1991). According to a teacher, the programme is more like an interesting activity within after-school care. She says:

> There are some [children] that participate because it is fun for the moment. It is like an ordinary activity in after-school care or a physical education class. I don't think they understand the idea with the programme, nor their families, what a great opportunity it is.

Even though this seems to be a problem for the SAP management and the sport clubs, this was not an issue among the interviewed children. One sport club leader agreed with the description that the children mixed the different aims between the SAP and regular school activities. As a sport leader, he thought that it can be difficult to recruit new members because of this:

> My experience is that the children don´t come because they want to try a particular sport, but more because the programme is a fun element in the after-school care context.

Again, this is merely a problem for the sport clubs and still not an issue among the children. In this context and according to James and James (2003), children have their own agency, which means that they interpret and take their own decision in different contexts. To some extent, the SAP becomes what children want the SAP to be. And some children take part in the SAP just to learn different sports, and they do not have any interest in taking up a conventionally organized sport. In line with Bourdieu's concept of sport capital (Broady, 1990; Bourdieu & Wacquant, 1992), children's orientations in the SAP can be governed by the structure and volume of their sport capital. An interviewed teacher said that it can help if the children have friends in a sport and if they know how to take up a sport, but much hinges on the child's own interest. This

motivation may take many forms. A boy aged 9, who wanted to start playing basketball, gave the following response to the question if the programme had inspired him: “No”, he said. “It was because I am tall”.

Furthermore, transferring children from the SAP to conventionally organized sport requires a consciousness that the two are different contexts. What is perceived as meaningful practice in the SAP does not necessarily apply to conventionally organized sport (Lave & Wenger, 1991; Bourdieu, 1990; 1991). A girl in the study liked to play different ball sports in the SAP, but not in conventionally organized sport, and had no plan to join a sports club. Because someone likes to participate in the SAP, it does not signify that he or she automatically likes to participate in conventionally organized sports.

Leadership

Another theme frequently mentioned in the interviews was leadership. According to the programme manager, it is important that the sport club leaders are competent and conscious about the aims of the SAP. He said:

> Club leaders that are invited have an extremely important role, and therefore an incompetent person cannot be in charge. It is supposed to be quality, with a child perspective and an understanding of the concept.

Managing the activities in the SAP as a coach calls for a certain types of skills. The coaches meet a different context than the ones they are used to, and find that aspects valued as “high skills” in conventionally organized sport do not necessarily mean “high skills” in the programme context. In Bourdieu’s words, a different capital is valued and requested in the programme compared to conventionally organized sport.

One of the teachers emphasized that it requires a special competence to be a leader in SAP. He elaborated on the difficulty in leading SAP activities as many sport club leaders do not want to lead the activities alone without support from parents or teachers. This was also pointed out by the sport leaders. One leader said:

> It has been fun to participate in the SAP, but it would have been helpful if there had been other adults present during the activities, especially adults who are familiar with the children, for example, a teacher. Without support from other adults, we need to put a lot of time taking care of different kinds of disturbance among the children. It would be better if we could get the opportunity to focus more on the sport activities.

According to a sport club leader, another kind of leadership and a different pedagogy is required from coaches in the SAP. She pointed out that it is an interesting learning process to be part of the SAP because it differs from conventional sport activities. She described the sport club and the SAP as two different "communities of practice" (Lave & Wenger, 1991). For her the SAP is an unfamiliar environment and she feels uncomfortable. She added that without a prior pedagogical education in child development, the task of coaching in the SAP is more difficult. She said:

> If I hadn't been studying education at the university, I probably would have felt a little lost and would not have known how to meet the children's interest and organize sport in a different way from a child perspective.

What she implies is that children's intentions and interests must be taken into account because they are significant in the construction of practice within the SAP. As Bourdieu (1991) suggests, change in sport practice is a relation between what sport activities are offered and potential practitioner's

expectations and interests. The Programme manager emphasized that he has an advantage because he is a PE-teacher and has knowledge of pedagogy and child development. This knowledge, he stated, is often lacking in coaches engaged in conventionally organized sport.

Concluding remarks

The concept of the SAP advocates a change of the established logic of practicing children's sport, i.e. organized conventional sport. The purpose of this paper was to study childrens' and engaged adults' experiences of participating in a SAP. The result showed that the organization and practice are still closely related to conventionally organized sport. Further, it also proved to be a new way of organizing and practicing children's sport – with its own logic. The history of the field of sport has contributed to a conscious and unconscious idea of the meaning and function of competitive sport. The absence of organized competition, less intensive activities, more flexibility and variation in the SAP, challenge this dominant hegemony, especially in the subfield of children's sport. When the adjusted and developed "Sport for All" initiatives are implemented, sport will be offered in a new context with other meanings and functions compared to conventionally organized sport (Bourdieu, 1991; 1990; Redelius, 2002; Skille, 2004; 2007). Consequently, the SAP concept calls for a new way of approaching children's sport, and new demands on those who organize and lead the activities.

If the logic of children's sport is changing, which the present study indicates, the conditions of leading, teaching and coaching children's sport must also change. The result shows that it can be problematic for the sport club leaders to manage the activities in the SAP. The children's intentions and interests in combination with the structure of the SAP have an impact on the logic of practice, and will

also challenge the sport leaders' coaching style (Alanen, 2001; Bourdieu, 1990, 1991; Bourdieu & Wacquant, 1992; James & James, 2003).

Historically, sport club leaders' competence is imbued with what is considered valuable for organizing and practicing children`s sport – they have a "sense of the game" (Bourdieu, 1990; Säfvenbom, 2009). The sport club leaders' sport habitus is formed on the basis of their experience of conventionally organized children's sport. They have a position in the field of sport that requires a different capital compared to the SAP. Hence, in line with the results of our study, they have a sport habitus, which is suitable for conventionally organized sport but is less appropriate to the SAP practice.

Furthermore, the construction of the SAP makes it difficult for the leaders to incorporate knowledge and skills concerning how to act, teach and coach children in the SAP. In contrast to the leaders, the children and the teachers attend the activities more regularly. This gives them a better opportunity to learn the practice that is recognized in the SAP context. Moreover, the children and the teachers share the same community of practice every day in the regular work at school. However, the sport club leaders are unfamiliar in the context of the SAP, and have few chances to become familiar with the context (Lave & Wenger, 1991).

Our results show that the implementation of the SAP can contribute to a process of changing the predominant ideas in conventionally organized sport. In line with Hardman (2008), we argue that knowledge of, skills in and dedication for a traditional sport are not enough; it is also important to be aware of ethics and morals in relation to children`s rights and development.

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Causes and consequences of dropping out from organized youth sports

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Abstract: The purpose of this study is to examine dropout reasons and various types of dropouts in relation to demographic variables, various types of sports, physical activity, and underlying motivational processes. Retrospective data was collected from three cohorts including 1,176 participants, of which 712 stated that they had sometimes dropped out of organized sport. Findings showed that time-related reasons were the primary causes for dropping out. It was also revealed that athletes with low versus high levels of perceived physical competence dropped out to a higher extent because of experiencing too much pressure, and athletes reporting low versus high social competence withdrew to a higher extent because they did not like their teammates. Results also showed that girls with a foreign background had a higher rate of dropouts compared to boys with the same background. Girls with foreign backgrounds were also found to be less physically active after dropping out from organized sports.

Key words: Dropout, surface, underlying reasons, competence, physical activity

Introduction

Sports are the most popular leisure activity in Western countries, especially in Sweden where almost 90% (~1.7 million) of all children and youths at times have been participating in some of the 20,000 sports clubs located throughout the country (Swedish Sports Confederation, 2011; Wagnsson, 2009). Even though participating in organized sports continues to be one of the most popular leisure activities, a significant number of the athletes quit organized sports as they grow older. The decline in youth sport participation starts at the age of 13

and continues until late adolescence (i.e., 17-18 years), when only approximately 30% of all youths still participate in organized sports (Swedish Sports Confederation, 2011; Wagnsson, 2009). In other words, there is no problem getting children involved in organized sports, but keeping them involved seems to be a great challenge.

Youth sport dropout has been an issue for researchers since the early 1970s. Primarily this research was descriptive, focusing on identifying reasons for dropping out of organized sports. A variety of reasons for withdrawal were detected, including conflicts of interest, lack of fun and low perception of ability (Cervelló, Escartì, & Guzmàn, 2007; Weiss & Amorose, 2008; Patriksson, 1988). Moreover, differences between groups such as gender, types of sports and age have been studied (Molinero, Salguero, Tuero, Alvarez & Márquez, 2006; Salguero, Gonzalez, Tuero & Marquez, 2003; Butcher et al., 2002). This research has revealed that reasons such as "More time for school", "More time for other sports" and "Did not like the coach" are becoming more important with increasing age. Athletes who drop out from individual sports rate performance ability linked to competition as a more important reason than those dropping out from team sports. Gender differences that have emerged are that girls drop out to a greater extent than boys because they feel that they have low performance ability and that they experience too much pressure.

Previous research has provided a greater understanding of the reasons for dropout, but in order to increase the theoretical knowledge more research derived from countries with different (sporting) cultures would be useful (Weinberg, et al., 2000; Si & Lee, 2007). Bairner (2010) suggests that there is evidence of a specifically Scandinavian approach to sport, associated above all with social solidarity and how to maintain a balance between mass participation and elite performance.

Moreover, there is a gap in the dropout literature regarding the relations between dropout and ethnicity. Research on how people with different ethnic backgrounds, other than Swedish, influence sports participation is warranted, especially in view of the fact that the proportion of foreign-born citizens has increased in the past twenty years, and that integration into the Swedish society through sport has become a high priority (Peterson, 2008).

Gould and Petlichkoff (1988) suggest that it would be erroneous to believe that young athletes who end their participation in sports will never take part again. They present two sport withdrawal categories: *sport-specific dropout* (i.e., dropping out of a specific sport while joining or continuing in another sport) and *domain-general dropout* (i.e., quitting all sports). Several studies have confirmed that many of those who drop out of sports will reenter the same or other sports/clubs later on (Butcher, Linder & Johns, 2002; Patriksson, 1988; Seippel, 2005). However, few researchers have made a distinction between sport-specific and domain-general dropouts when studying dropout reasons. Moreover, to our knowledge no study has used Gould's and Petlichkoff's (1988) model to examine young people's overall level of physical activity after a domain-general dropout. It is important to have more knowledge in this area because physical activity is an important factor to prevent overweight and obesity among young people (WHO, 2012).

Gould and Petlichkoff (1988) have claimed that descriptive research does not provide a complete understanding of why youths discontinue in organized sports, which calls for a study of the underlying motivational processes to comprehend the surface level reasons for dropping out. Studies that have used a more theoretical approach, such as Competence Motivation Theory (Harter, 1982; 1999) and Achievement Goal Theory (Nicholls, 1989) when trying to

grasp these processes, indicate that children and adolescents who withdraw from youth sports are more ego-oriented[2] and perceive themselves to have lower physical competence than those individuals who remain involved in sports (Cervellò et al., 2007; Kelly, 2002; Ommundsen & Vaglum, 1997; Sarrazin, Vallerand, Guillet, Pelletier, & Cury, 2002; Ullrich-French & Smith, 2008). Moreover, McCarthy, Jones, and Clark-Carter (2008) found that perceived competence strongly predicts enjoyment in sports while Butcher, Sallis, McKenzie and Alcaraz (2001) have shown that perceived physical competence predicts participation in sports and the extent to which youths change from one sport to another. However, no study has examined if physical competence can predict the amount of physical activity after domain-general dropout.

Furthermore, dropout research using Competence Motivation Theory as a theoretical framework has been partially contradictory. For, in contrast to the studies reported above, there are studies that have found no differences in physical competence between dropouts and non-dropout athletes (see Weiss & Amorose, 2008 for a review). These results have contributed to research with the purpose of examining the relationship between perceived competence and different reasons for participation. For example, Klint and Weiss (1987) found that athletes with high physical competence rated skill development reasons as more important and those with higher social competence rated friendship and team affiliation as more important. However, more research is needed to reveal how underlying motivational processes (e.g., perceived competence) are related to surface level reasons (i.e., reasons young athletes cite for dropping out of organized sports), preferably using Harter's (1982, 1999) Competence Motivation Theory as a theoretical framework. As previous research has

[2] Characterized by a normative perception of ability with the primary goal to perform a task better than others, or as good as others, but with less effort in order to perceive oneself competent (Nicholls, 1989).

indicated, this theory can be useful when studying the cognitive processes that underlie youths' decisions to dropout of organized sport.

Purpose of the study

The purpose of this study is to examine the most common cited surface level reasons for dropping out of organized sports, and to examine various types of dropouts (sport-specific versus domain-general dropout), in relation to i) demographic variables such as gender, age and ethnicity ii) various types of sports (team versus individual sport) and iii) frequency of physical activity after domain-general dropout.

Using Harter's (1982; 1999) Competence Motivation Theory as a framework, an additional purpose is to iv) study the relation between underlying motivational processes (i.e., perceived physical, social and cognitive competence) and surface level reasons for dropping out of organized sports. Moreover this study aims to iv) examine whether perceived physical, social and cognitive competences are related to frequency of physical activity/inactivity among domain dropout-youths.

Method

This study is part of a larger research project funded by the Swedish Sport Research Council. The aim of the project is twofold: i) to study socialization effects of youth sports involvement, and ii) to examine dropout types and reasons in organized children and youth sports in Sweden. This study focuses on the second purpose of the project, using data from the first data collection. The project has a three-occasion longitudinal multiple cohort design, including elements of retrospective questions.

Participants and procedures

Data were collected from pupils residing in schools situated in the western and middle parts of Sweden. The initial sample (85% answering rate), including both participants and non-participants in organized sports, was based on a randomly stratified sampling procedure and comprised of a total of 1,176 pupils (41% females and 21% with foreign background) distributed in primary school (33%), lower secondary school (34%), and upper secondary school (33%). The intensity of sport involvement was very wide, ranging from youths who had just entered sports to elite participants who were involved more than 40 hours per week. On average participants took part in sports for 3.17 hours per week, distributed over 45 different sports, where the most common sports were: soccer (40%), equestrian (9%), ice-hockey (6%), floor-ball (5%) and golf (5%). The most common dropout sports were football (57%), followed by handball (17%), floor-ball (14%) and martial arts (14%).

The questionnaire was administered by a co-director of the project and/or by trained university students and was collected in the respective classrooms. This procedure made it possible to guide participants with poor reading abilities and to answer questions related to the questionnaire. The purpose of the study was explained, and it was emphasized that participation was voluntary, and that they could withdraw at any time. Parental and teacher consent to participate in the study was also given. Parents were sent a letter explaining the purpose of the study and were asked to contact the research leader of the project if they did not want their child to participate in this study. The project was approved by the Research Ethical Committee at Karlstad University.

The questionnaire was also translated into Swedish using a structured translation-back-translation process (Geisinger, 2003). In this process, the questionnaire was translated from English into Swedish by a translator and then

back-translated into English by a different translator. The scale was checked for differences between the English and Swedish versions, and was adjusted accordingly.

Questions regarding alcohol and tobacco were not given to pupils in the lower secondary school (10-12 years). Additionally, questions regarding goal orientation were also excluded, since children of these ages have generally not developed the ability to assess the motive for success (Nicholls, 1989). Moreover, the wording and visual presentation were aligned according to the respective age group. The children's questionnaire also contained cartoon characters that were designed to motivate and guide when answering the questions. To strengthen the validity and reliability of the used instruments, a pilot study was conducted. Pupils filled in the questionnaire on two separate occasions and were asked about the form, scope and query design. After that the questionnaire was modified to its final form.

Measures

Socio-demographic variables

In order to analyze dropout reasons in relation to the age of dropout the respondents were divided into three age groups: a) dropout before the age of 11 (<11 years), b) dropout between the age of 11-13 years (11-13 years), and c) dropout after the age of 13 (>13 years). Ethnicity was categorised and coded into two categories: Scandinavian background (83%), when participants and parents were reported to be born in Scandinavia and foreign backgrounds for other constellations (i.e., participants were born outside Scandinavia and one/or both parents born outside Scandinavia). Participants with foreign backgrounds were distributed accordingly: Western Asia, 32%; Southern Europe, 26%; North Africa, 12%; Eastern Europe, 7%; South America, 7% and rest of the world, 16%.

Sport participation

Participation in organized sports was assessed by the question "Are you a member of a sports club?" The possible answers were "Yes", "No, I have never participated in a sports club", and "No, I have dropped out." The respondents were then asked to list every sport in which they participated.

Dropout and types of sports

Dropping out from organized sport was assessed by the question, "Have you dropped out of any organized sports? The possible answers were "No, I continue to practice every sport I begun" and "Yes, I have dropped out from one or several sports". The respondents were then asked to list every sport from which they had dropped out. For each dropped sport, details were obtained, including the name of the sports club and the age at which they began and withdrew from the activity." A dichotomous variable of participation in various sports was then created (*Individual* and *Team Sports*) based on this information. Only the persons (n=712) who stated that they had dropped-out of organized sports were included in further analysis (see Table 1 for descriptives).

Dropout types

Athletes who responded that they participated in organized sports and additionally answered that they had dropped out of one or several sports, were categorized as sport-specific dropouts. Athletes who answered "No, I have dropped out" when asked if they were a member of a sports club, were categorized as a domain-general dropout.

Dropout reasons

Dropout reasons were measured by using 12 potential dropout reasons derived from a review of the literature (Butcher et al., 2002; Patriksson, 1988).

Responses to each of the items were reported on a 5-point Likert scale ranging from *I strongly disagree* (1) to *I strongly agree* (5). The dropout reasons included in the study have also been replicated in subsequent studies (e.g. Armentrout & Kamphoff, 2011; Enoksen, 2011; Molinero et al., 2006). Furthermore, Weiss and Williams (2004) suggest that many dropout reasons are, inversely, related to reasons for staying involved in sport, thus identifying three highly consistent reasons for participating in sports. These reasons are also represented among the 12 main reasons for dropping out of organized sports mentioned above: (a) (did not) develop or demonstrate physical competence or adequacy (e.g., "I was not good enough") (b) (did not) attain social acceptance and approval (e.g., "I did not like my team members") (c) (did not) enjoy experience (e.g., "I did not have fun").

Physical activity

Physical activity was assessed through one question regarding sport, gym or exercise during leisure time using a five-item response scale (*Not at all*=1, *1-3 times/month*=2, *1-2 times/week*=3, *3-4 times/week*=4, *5 times/week or more* =5). This item relates to participation in both organized and unorganized physical activity during leisure time. Participants, who reported that they were not physically active at all, or only active one to three times per month, were labeled as physically inactive. Additionally, those who reported that they remained physically active twice a week or more were categorized as physically active.

Perceived competence

A modified version (shortened and a one-item-one-pole-format) of Harter's SPPC-scale (1982, 1985) was used for the assessment of self-concept. Reliability coefficients (Crohnbach's alpha) for physical competence (.80) and social competence (.80) were acceptable (Tabachnick & Fidell, 2007), whereas

alpha estimates for cognitive competence were poor (.42). Consequently, this variable was removed from further analyses.

Data Analyses

For descriptive analyses, means and standard deviations were computed for each variable. In order to investigate whether dropout reasons were related to gender, age, ethnicity, types of sports (team versus individual sports), sport-specific versus domain-general dropout, perceived physical and social competence, a multivariate analysis of variance (MANOVA) was performed for each variable with the 12 dropout reasons (Butcher et al., 2002; Patriksson, 1988) as dependent variables. Moreover, to reveal whether perceived competence differed between those who had made sport-specific or domain-general dropouts, a MANOVA was conducted with the types of dropout (domain-general and sport-specific) as an independent variable and perceived physical and social competence as dependent variables. Furthermore, with the intention of examining if physical and social competences are related to physical activity after a domain-general dropout, a similar analysis was conducted with physical activity as an independent variable. Significant multivariate effects were followed up with univariate analyses (ANOVA). Significant effects in more than two groups were followed up with Sheffé's post hoc test (Tabachnick & Fidell, 2007).

In order to examine whether dropout types could be differentiated by gender, age, ethnicity and types of sport, Chi Square tests were conducted for each variable in relation to types of dropouts (domain-general and sport-specific dropout) and physical activity after a domain-general dropout. An alpha level of $p<.05$ was used for all statistical tests (Tabachnick & Fidell, 2007).

Results

Table 1 outlines descriptive statistics for the variables examined in the study, except for the 12 reported dropout reasons (see table 2). Among those who dropped out of a sport, almost half continued in another sport club (i.e., sport-specific dropouts), while the other half left all sports club activities (i.e., domain-general dropouts). Additionally, results showed that the main part of the domain-general dropouts remained physically active twice a week or more.

Table 1:

Descriptive statistics for drop-out participants'(n=712) characteristics on the variables examined.

Variables	Descriptive statistics
Age	*M*=14.4 (*SD*=2.4)
Gender	Girls, *n*=295 (41%); Boys, *n*=417 (59%)
Type of sport	Team sports, *n*=437 (63%); Individual sports, *n*=252 (37%)
Ethnicity	Scandinavian background, *n*=570 (83%); Foreign background, *n*=140 (17%)
Dropout type	Domain-general, *n*=344 (48%); Sport-specific *n*=368 (52%)
Physical activity after domain-general dropout	Physical active, *n*=223 (66%); Physical inactive, *n*=115 (34%)
Age for dropout	*M*=11.5 (*SD*=2.7); n_1=260 (<11 years); n_2=251 (11-13 years); n_3=145 (>13 years)
Physical competence	*M*=3.1 (*SD*=1.6) (Min=1, Max=5)
Social competence	*M*=3.7 (*SD*=0.8) (Min=1, Max=5)

Dropout reasons and types of dropouts

The most important reason given for dropping out was "Not fun" (see table 2). With the exception for this reason, time-related reasons were found to be the most important ones for dropping out of organized sports. These reasons included "More time for other leisure activity", "More time for friends", and "More time for school". The MANOVA revealed significant overall differences, $F(12,619) = 19.58$, $p<.001$, Wilks' $\lambda = .73$, $\eta_p^2 = .28$), and the following

univariate analyses showed significant differences between two reasons related to various dropout types.

Sport-specific dropouts placed greater emphasis than domain-specific dropouts on the motive "Not fun", while domain-general dropouts placed greater emphasis than sport-specific dropouts on the motive "Long distance to training" (see Table 2).

Table 2

Participants' self-reported reasons for dropping out of organized sports, related to various types of dropouts (Min = 1, Max = 5).

	Total		**Sport - specific**		**Domain-general**			
Dropout reasons	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*	η^2
Not fun	2.96	1.50	3.12	1.52	2.78	1.47	8.17**	.01
Other leisure activities	2.76	1.47	2.83	1.51	2.69	1.46	1.39	
More time for friends	2.66	1.38	2.55	1.39	2.75	1.38	3.46	
Other sports	2.39	1.52	3.05	1.57	-	-	-	
More time for school	2.00	1.23	1.95	1.19	2.02	1.26	0.54	
Too much pressure	1.87	1.19	1.81	1.18	1.91	1.21	1.05	
Not good enough	1.86	1.19	1.90	1.24	1.76	1.09	2.34	
Did not like the coach	1.75	1.25	1.68	1.17	1.80	1.30	1.44	
Did not like the team members	1.72	1.21	1.76	1.24	1.72	1.20	.65	
Did not get to play/compete enough	1.50	1.05	1.50	1.03	1.46	1.04	.23	
Long distance to training place	1.48	1.01	1.41	.93	1.57	1.10	4.10*	.01
Too expensive	1.33	.83	1.29	.74	1.34	.90	.63	

Note: *p < .05, **p < .01, ***p < .001

Gender

The MANOVA revealed overall differences in dropout reasons for gender, $F(12,632) = 2.48$, $p<.01$, Wilks' $\lambda = .96$, $\eta_p^2 = .04$. The univariate analyses showed significant differences for the reasons "Other leisure activities", $F(1,643) = 10.83$, $p <.001$, $\eta^2 = .02$, and "Did not get to play or compete enough", $F(1,643) = 4.72$, $p <.05$, $\eta^2 = .01$. Boys placed greater emphasis than girls on the reason "Other leisure activities", ($M = 2.91$, $SD = 1.50$ vs. $M = 2.55$, $SD = 1.41$) and on "Did not get to play or compete enough" ($M = 1.57$, $SD =$

1.12 vs. M = 1.39, SD = .95). No significant differences were found between girls and boys in relation to sport-specific or domain-general dropouts or in the case of physical activity after domain-general dropout.

Age

When comparing domain-general and sport-specific dropouts in relation to the dropout age categories, results showed that domain-general dropouts increased with the dropout age (37% at <11 years; 50% at 11-13 years and 65% for >13 years), while sport-specific dropouts decreased accordingly with age (63% at <11 years; 50% at 11-13 years and 35% for >13 years), $\chi^2(2, N = 644) = 28.23$, $p < .001$, Cramér's $V = .21$. Moreover, 57% of those who were domain-general dropouts, before the age of 11 and 76% of domain-general dropouts after the age of 13, remained physically active, $\chi^2(2, N = 305) = 8.00$, $p < .05$, Cramér's $V = .16$. The MANOVA showed a significant main effect for age, $F(24,1162) = 3.36$, $p < .001$, Wilks' $\lambda = .87$, $\eta_p^2 = .07$. The univariate analyses revealed that the reasons "Not fun" and "Not good enough" became progressively less important with age (see Table 3). Between the ages of 11-13, the motive "Too much pressure" became more important compared to other age groups. Furthermore, the motive "Did not like the team members" was significantly more important for those who dropped out in the ages of 11-13 than for those who dropped out after 13. Finally, the results showed that dropping out due to "Did not like the coach" was significantly higher rated among those in the oldest age group compared to those in the youngest age group.

Table 3:

Participants' self-reported reasons for dropping out of organized sports, related to age. Mean (Max=5 Min=1).

Dropout reasons	Age at dropout						Multiple comparisons[a]	η^2	*F*
	<11		11-13		>13				
	M	*SD*	*M*	*SD*	*M*	SD			
Not fun	3.15	1.49	3.11	1.53	2.35	1.37	1 > 3***; 2 > 3***	.05	14.52
More time for school	1.99	1.28	1.89	1.17	2.20	1.29			2.71
More time for friends	2.72	1.42	2.77	1.41	2.47	1.27			2.18
Other sports	2.52	1.54	2.45	1.56	2.12	1.48			3.06
Other leisure activities	2.72	1.49	2.84	1.50	2.76	1.46			.38
Not good enough	1.96	1.24	1.86	1.17	1.55	1.01	1 > 3***, 1 > 2*	.02	5.49
Too much pressure	1.78	1.15	2.05	1.30	1.69	1.05	2 > 1, 3*	.02	4.77
Too expensive	1.32	.79	1.32	0.89	1.34	.83			.03
Did not get to play/compete enough	1.55	1.13	1.50	1.03	1.39	.96			1.05
Did not like the team members	1.78	1.26	1.85	1.30	1.50	.98	2 > 3*	.01	3.54
Long distance to training place	1.47	1.03	1.49	.99	1.54	1.06			.20
Did not like the coach	1.59	1.12	1.82	1.27	1.90	1.34	3 > 1*	.01	3.28

Note: Group 1= < 11 years, group 2 =11-13 years, group 3 = >13 years

*p < .05,**p < .01, ***p < .001.

Ethnicity

The MANOVA revealed significant overall differences in dropout, $F(12,612) = 2.19$, $p < .01$, Wilks' $\lambda = .96$, $\eta_p^2 = .04$. The univariate analyses showed significant effects for "Have more time for school", $F(1,623) = 17.87$, $p < .001$, $\eta^2 = .03$. Athletes with foreign backgrounds ($M = 2.47$, $SD = 1.46$) to a higher extent dropped out in order to have more time for school in comparison with athletes with a Scandinavian background ($M = 1.91$, $SD = 1.15$). Analysis comparing girls with foreign backgrounds and girls with Scandinavian backgrounds revealed no significant multivariate difference. A similar analysis between boys with a foreign background and boys with a Scandinavian background showed a significant multivariate difference, $F(12,349) = 1.89$, $p < .05$, Wilks' $\lambda = .94$, $\eta_p^2 = .06$). The univariate analyses showed that only one of the reasons were significantly different: "More time for school". This motive was shown to be significantly more important for boys with foreign background

(M = 2.37, SD = 1.34) than for boys with Scandinavian background (M = 1.90, SD = 1.18), $F(1,360) = 4.13$, $p < .05$, $\eta^2 = .01$.

Further analysis showed no overall differences in dropout types (i.e., sport-specific or domain-general dropout) between athletes with Scandinavian background and athletes with foreign backgrounds respectively. However, girls with foreign backgrounds were significantly more represented in the domain-general dropout group (67% vs. 42%) and less in the sport-specific dropout group than boys with the same background (33% vs. 58%), $\chi^2(1, N = 112) = 7.36$, $p < .01$, Cramér's $V = .26$. Likewise, there were no significant differences between participants with Scandinavian background and foreign background concerning physical activity after a domain-general dropout. But further analysis showed that girls with foreign background were less physically active after domain-general dropouts than boys of the same ethnic background (49% vs. 83%), $\chi^2(1, N = 58) = 6.83$, $p < .01$, Cramér's $V = .34$.

Team and individual sports

The MANOVA revealed an overall significant multivariate difference between individual and team sports concerning dropout reasons, $F(12,623) = 3.39$, $p < .001$, Wilks' $\lambda = .94$, $\eta_p^2 = .06$. Univariate analyses indicated significant differences for the reasons "Not good enough", $F(1,634) = 6.97$, $p < .01$, $\eta^2 = .01$, "Cost", $F(1,634) = 13.91$, $p < .001$, $\eta^2 = .02$, "More time for school" , $F(1,634) = 4.13$, $p < .05$, $\eta^2 = .01$) and "Long distance to training place", $F(1, 634) = 4.54$, $p < .05$, $\eta^2 = .01$). Athletes who dropped out of team sports scored higher than dropouts from individual sports on the item "Not good enough" and "More time for school". Individual athletes ranked "Costs" and "Long distance to training place" as more important reasons than team sports dropouts.

There were no differences found in dropout frequency when comparing team and individual sports in relation to sport-specific or domain-general dropout.

Moreover, no differences were found when comparing different types of sports and physical activity after a domain-general dropout.

Perceived physical and social competence

In order to determine whether surface level reasons differed as a result of perceived physical and social competence the latter variables were categorized through the cumulative percent into two groups (cut point <50%): high and low perceived physical and perceived social competence. The multivariate analyses showed overall significant differences for social, $F(12,469) = 3.31$, $p < .001$, Wilks' $\lambda = .92$, $\eta_p^2 = .08$, and physical competence, $F(12,475) = 6.44$, $p < .001$, Wilks $\lambda = .86$, $\eta_p^2 = .14$) (see table 4). The univariate analyses showed that the reason "Other sports" was more important for those with high degree of perceived physical and social competence.

Those with high physical competence also dropped out to a higher extent because they wanted to have more time for "Other leisure activities". Athletes with both low perceived physical and low perceived social competence considered the motive "Too expensive" more important than those with high perceived competence respectively. Moreover, dropouts who perceived low physical competence rated the motive "Too much pressure" as significantly more important than those with high perceived physical competence. The results also revealed that athletes with low perceived social competence withdrew to a higher degree because they "Did not like their teammates" and because they perceived themselves to be "Not good enough" compared with athletes that perceived high social competence. Contrariwise, dropouts with high perceived social competence rate the motive "More time for school" higher than dropouts with low perceived social competence.

Table 4:

Reported reasons for dropout in relation to perceived physical and social competence. Mean (Min=1 Max=5).

	Physical Competence *n*=488						**Social Competence** *n*=482					
Dropout reasons	High		Low		*F*	η^2	High		Low		*F*	η^2
	M	*SD*	*M*	*SD*			*M*	*SD*	*M*	*SD*		
Not fun	2.88	1.52	2.93	1.46	.06		2.88	1.52	2.90	1.46	.09	
More time for school	2.12	1.24	1.92	1.16	3.40		2.13	1.32	1.92	1.08	5.13*	.01
More time for friends	2.57	1.32	2.65	1.35	.37		2.66	1.35	2.58	1.31	1.01	
Other sports	2.81	1.60	1.89	1.26	53.65***	.10	2.55	1.59	2.16	1.39	10.19**	.02
Other leisure activities	2.97	1.49	2.71	1.42	3.93*	.01	2.87	1.48	2.80	1.44	.71	
Not good enough	1.75	1.13	1.89	1.11	1.36		1.67	1.05	1.93	1.14	5.59*	.01
Too much pressure	1.79	1.09	2.02	1.26	3.95*	.01	1.82	1.14	1.98	1.22	1.64	
Too expensive	1.22	.60	1.42	1.00	6.95**	.01	1.19	.62	1.45	.97	11.42***	.02
Not get to play/compete enough	1.51	1.04	1.43	.92	1.55		1.45	.98	1.50	.99	.15	
Did not like the team members	1.70	1.17	1.74	1.20	.08		1.58	1.09	1.86	1.26	5.81*	.01
Long distance to training place	1.50	1.04	1.57	1.04	.46		1.57	1.14	1.51	.94	.76	
Did not like the coach	1.85	1.32	1.88	1.27	.00		1.79	1.28	1.94	1.30	1.54	

Note: *$p < .05$, **$p < .01$, ***$p < .001$

In order to study the relation between underlying motivational processes an analysis with various types of dropouts (domain-general and sport-specific) as an independent variable and perceived physical and perceived social competence as dependent variables was also conducted. The MANOVA revealed a significant multivariate difference, $F(2,514) = 40.31$, $p < .001$, Wilks' $\lambda = 0.86$, $\eta_p^2 = .14$. Follow up univariate analyses revealed that sport-specific dropouts perceived themselves as significantly more socially ($M = 3.83$, $SD = .75$ vs. $M = 3.60$, $SD = .90$), $F(1, 515) = 9.57$, $p < .01$, $\eta^2 = .02$, and physically competent ($M = 3.52$, $SD = .96$ vs. $M = 2.76$, $SD = 1.00$), $F(1, 515) = 80.41$, $p < .001$, $\eta^2 = .14$ than domain-general dropouts.

Moreover, following the fourth purpose of the study, a second analysis was conducted with the same dependent variables (i.e., physical and social competence) and with physical activity *after* domain-general dropout as an independent variable. The multivariate analyses revealed an overall significant difference, $F(2,748) = 42.13$, $p<.001$, Wilks' $\lambda = .90$, $\eta_p^2 = .10$). Univariate analyses showed that athletes who were physically active after a domain-general dropout scored significantly higher on physical competence ($M = 3.28$, $SD = 1.04$ vs. $M = 2.39$, $SD = 1.07$), $F(1,749) = 84.01$, $p < .001$, $\eta^2 = .10$, and social competence ($M = 3.77$, $SD = .82$ vs. $M = 3.41$, $SD = .97$), $F(1,749) = 21.03$, $p < .001$, $\eta^2 = .03$) than those who were physically inactive.

Discussion

The overall aim of this study was to investigate processes related to dropping out of organized youth sports. Earlier research has indicated that dropping out of sports is a complex phenomenon with numerous factors involved. In the same way that children participate in youth sports for a variety of reasons, they also cite multiple reasons for withdrawal from organized sports (Gould & Petlichkoff, 1988). This complexity contributes to making the subject of dropouts a complicated topic to investigate. Gould's and Petlichkoff's (1988) model gives an increased theoretical understanding of the dropout process, but the model in total seems very difficult to test empirically. The intent of this study was therefore to use some of the theoretical ideas in the model to reach a deeper understanding of the dropout process.

The result of this study showed that dropout from sports does not necessarily have to be permanent, either from organized sports or physical activity. As indicated by Seippel (2005) and Patriksson (1988), there seems to be a great mobility among youths in sports. This factor is important to consider when discussing the frequency of dropouts. Moreover, dropout results indicate that

dropout patterns differ depending on at what age the dropout occurs. Those who dropped out before the age of 11 were mostly categorized as sport-specific drop-outs and those who dropped out after the age of 13 as domain-general dropouts respectively. Hence, it seems appropriate to suggest that youths try different sports to a higher extent at a younger age (i.e., the sampling years) before focusing on one or two specific sporting activities (i.e., specializing years) (Côte´, 1999; Fraser-Thomas, Côté & Deakin, 2008). When youths are entering the specializing years (13-15 years), it also seems plausible that they have to enjoy the activity and perceive themselves to be competent in the specific sport in order to find it worthwhile to perform the time-consuming training often required to excel. Additionally, the opportunity to enter a new sport, or to perform at a less intense level, will probably be limited as they grow older, thus increasing the risk of a general dropout from organized sports. In the specializing years many clubs are also starting elite activities, where teams already have started to sort players out, making it hard for novice players to enter (Franzén & Peterson, 2004). Moreover, when entering a new sport, youths probably will perceive themselves to be less competent than their peers, increasing the probability to drop out of sports (Harter, 1999; Nicholls, 1989).

Lindner, Johns and Butcher (1991) have proposed that age-related psychosocial and physical differences influence the withdrawal process. In the present study there were several significant age-differences noticed. The motive “Too much pressure” was the most important motive cited between 11-13 years. This might be a result of an increased focus on competition, which is generally seen in youth sports at the end of this age-span (Côté, 1999; Fraser-Thomas, et al., 2008). In turn this might also increase the social demands to perform above, or at least at the normative standard in the training group. Interestingly, the pressure motive seems to become less important after 13 years of age. Perhaps

this implies that those who still participate after these ages have learned to handle the pressure?

As indicated by Butcher et al. (2002), disliking the coach becomes a more relevant motive for dropping out of organized sport with age. It is also interesting to note that there were no significant age differences detected related to the motive “Other things to do”, which have been seen in other studies (Butcher et al., 2002; Molinero, et al., 2006).

Notably, a majority (76%) of the domain-general dropouts after the age of 13, continued to be physically active, while only 57% of domain-general dropouts before the age of 11 continued to be physically active. In the light of these findings, it appears that one should pay more attention to the younger age groups when addressing interventions to get children to be more physically active. Moreover, a Danish study has shown that self-organized physical activities (e.g., walking, jogging) and physical activities in commercial organizations (e.g., fitness center) are increasing considerably at the age of 16-19, while participation in organized sports are decreasing at the same rate (Pilgaard, 2012).

There were no significant differences found in dropout types related to gender or types of sports (team or individual). However, results showed that girls with a foreign background had a higher rate of domain-general dropouts compared to boys with the same background. The same patterns occur in relation to physical activity after domain-general dropout. Further research would benefit from identifying the obstacles for this group found in organized sports and moreover to reveal the types of physical activity to which they are attracted. The twelve dropout reasons used in this study seem not sufficient to explain what elements in organized sport that do not fit girls with foreign backgrounds. With a view to

developing theoretical perspective on dropout from sport, further research should determine dropout reasons for this group.

According to Gould and Petlichkoff (1988), it is important to understand the underlying processes that lead to youth attrition from organized sports. Harter's (1982, 1999) Competence Motivation Theory, for instance, has strongly been supported in the physical domain. Empirical findings have shown that sport dropouts typically score lower on perceived competence than persistent participants (Ullrich–French & Smith, 2008; Weiss & Amorose, 2008). Supporting these findings, results in the present study showed that the domain-general dropouts reported a lower degree of perceived physical and social competence than sport-specific dropouts. Moreover, the motive "other sports" seemed more important for those reporting high degree of perceived physical and social competence. In line with Butchers and her colleagues (2002), these findings indicate that individuals who perceive themselves to be highly physically and socially competent have greater opportunities to change to other sports when faced with a context that does not fully satisfy their needs, or when they find other more enjoyable alternatives to choose between. Additionally, the results showed that participants who perceived themselves to have a high degree of physical or/and social competences and also were categorized as domain-general dropouts continued to be significantly more physically active outside organized sports, compared to domain-general dropouts with low perceptions of physical or/and social competence. Moreover, those youths who perceived themselves to have high degree of physical or/and social competences remained more physically active in general–whether specific or domain dropouts–either by continuing in some other sports club or being physically active in other activities outside organized sports. Consequently, it seems more important to view dropouts as a problem among those who perceive themselves as having a low degree of physical or/and social competence than among the group who

perceive themselves to have a high degree of some of the competences mentioned above.

McCarthy, Jones, and Clark-Carter (2008) have found that perceived competence strongly predicts enjoyment in sports. In line with this, it seems reasonable to suggest that perceived competence underlies the surface reason "Not fun." However, the results in the present study did not support this hypothesis, showing no significant differences between those with high or low physical and social competence respectively when comparing the strength of the motive "Not fun". However, we found significant differences between participants with high versus low perceived physical competence in relation to the reason "To much pressure". These results may be interpreted as a consequence of a selection out of sport effect, meaning that sport participants with low perceived physical competence are sorted out of their sport, for example, because they are not able to handle the demands existing in organized sport. As previously reported, "too much pressure" becomes a more important motive between the ages of 11-13. Consequently, further research could usefully investigate if there is a relation between age, physical competence, and the dropout motive "Too much pressure". Furthermore, dropout youths, who rated themselves to have low social competence, attach significantly greater importance to the motive "Did not like the team members" than dropouts reporting high social competence. In line with earlier research (see Smith, 2006 and Weiss & Stuntz, 2004 for an overview) this might indicate that participants, rated by others to have low sport-specific competence have difficulties being fully accepted by their peer group and are consequently more likely to drop out of sports because of disliking their team mates.

Limitations and future research

There are some limitations in this study that are worth noting. First, it is important to consider that the effect sizes of significant differences were moderate or low for most variables studied, and that the mean lies below 3 for all dropout motive variables (min = 1, max = 5). This might imply that there are other, more important surface level reasons for dropping out of organized sports that have been missed out in this study. Moreover, the retrospective design is inevitably flawed with some problems when respondents are trying to recall earlier experiences (distortions when recalling and reinterpretations when recalling).

Future research would benefit from using prospective data (i.e., longitudinal designs), preferably following youths into adulthood in order to draw safer conclusions and perhaps reveal presumptive effects shown later in life. Moreover, using longitudinal designs makes it possible to sort out whether differences between groups are caused by sport participation per se, or if they, to some extent are due to selection processes, reflecting differences in aspects of psychosocial characteristics established before beginning these sport activities.

A longitudinal design would also provide a deeper understanding of the decision-making process of withdrawal and make it possible to study the athlete's mobility. There seems to be a risk that dropout studies that do not consider different dropout types are simplifying the reasons for withdrawal and consequently misinterpret the extent and the consequences of dropping out of sports. One must remember that it is necessary to separate the different types of dropouts from each other since they have different meanings. It is, for example, one thing to change sports or clubs; and quite another to end all organized sports, thereby ending up doing no physical activities at all. To fully understand the processes influencing withdrawal from organized youth sports, one must

consider the question from different perspectives. It would be useful to distinguish between the individual level, the sports club level, the sport federation level and the national sport confederation level. From an individual perspective an athlete can drop out from a certain sport, but still be active in another sport. However, at the sports club level one club has lost a member, while another club has gained one. The same kind of reasoning can also be applied to the sport federation level. At the national sport federation level there is still no problem. But if an individual makes a general dropout, there will be a problem at all the levels mentioned above. From a societal perspective there will only be a problem if an individual quits all kinds of physical activity since there will be an elevated risk of developing health related diseases (Biddle, Gorely, Stensel, 2004; Janssen & Le Blanc, 2010.

Additionally, more qualitative research is needed. It is hard to identify all factors, regarding such a complex phenomena as sport withdrawal with a survey design. A deeper understanding of why youths drop out from organize sports will hopefully contribute to develop youth sports as a positive socialization arena (see, for example, Fraser-Thomas et al., 2008). Ideally, children and youths will gain greater enjoyment when participating in organized sports that, lead to a lifelong interest in being physically active, even if they eventually choose to withdraw entirely

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Why do Wii teach physical education in school?

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Abstract: Videogames including bodily movement have recently been promoted as tools to be used in school to encourage young people to be more physically active. The purpose of this systematic review has been to explore the arguments for and against using exergames in school settings and thus facilitate new insights into this field. Most of the arguments for and/or against the use of exergames can be organised in relation to health and sport. In relation to health, the dominant theme is about fitness and obesity. In relation to sport, the two main themes were skill acquisition, and exergames as an alternative to traditional PE. The idea why Wii teach PE in schools is that children are becoming more obese, which in turn threatens the health of the population. Schools seem to be an appropriate arena for this intervention, and by using exergames as an energy consuming and enjoyable physical activity a behaviour modification and the establishment of good healthy habits is argued to be achieved.

Key words: Exergames, review, synthesis, physical education, health

Introduction

In society, video-games are often pointed out as risk factors in relation to physical inactivity, sedentary behaviour and increasing levels of obesity. In particular, young people's video gaming is portrayed as something that involves an excessive sedentary lifestyle. Media reports often tell us how television, computers, fewer young people engaging in sport, decreasing physical activity levels and reduced curriculum time for physical education in school lead to increased levels of obesity in society. In the Scandinavian countries, studies also

show how inactive people often stay inactive while the already active ones often increase their levels of physical activity (cf. Svensson et al., 2010). In short, both the media and public health research present us with a dreary picture, and limiting young people's inactive 'screen time' is often regarded as an important public health endeavour.

At the same time, computers are an important source of information, and IT-competence and experience are advantageous in society. At the centre of this paradox is the introduction of a new type of videogames, in which bodily movement and physical activity, rather than sedentary screen time, form a major part. These games – so-called *exergames* or active video games[3] – involve physical movement through the use of balance-boards, step-up boards, bicycles, dance-pads, or the use of a remote control as a tennis racket.[4] Several games also include webcams, so that the bodily movements of those playing the game can be tracked.

Exergames are increasingly promoted in several countries (e.g. Australia, Canada, the UK, the USA and Sweden) as tools that can be used in school to encourage young people to be more physically active. In particular, these games are regarded as part of the future of physical education (PE) and as a modern way of doing physical training in school. In this article, this idea will be explored by means of a review of existing literature in the field.

The purpose of this systematic review and synthesis is to explore the arguments for and against using exergames in school settings found in popular and research texts. As a first step, a review of popular 'literature' and scholarly texts relating

[3] For example, Wii fit, Wii sports, Dance Revolution, Your Shape, Kinect, Move, etc

[4] These games have proved popular in many countries and are best sellers. According to statistics from Nintendo company Wii sports has sold 79 million copies, Wii sports resort 30 million copies and Wii fit plus 20 million copies up until march 2012.

to schools' use of exergames is conducted. In a second step, the synthesis, the assumptions made by both critics and advocates in terms of what is taken for granted regarding health and education is critically explored.

Why exergames and why now?

Over the last twenty years or so, questions about obesity have been high up on the public health agenda (cf. Skidmore et al., 2004; Wald et al., 2004; Zarocostras, 2004). In particular, children and young people have been pin-pointed as important interventional targets (Dietz, 2004; Ebbeling et al., 2002; Jerome et al., 2007; Marcus, 2005).

In this context, several studies show a clear relation between time spent on video- and computer games, low physical activity levels and increased weight (Carvalhal et al., 2007; Vandewater et al., 2004; Wilson, 2004). At the same time, other studies with similar samples have been unable to identify this relation (Biddle et al., 2004; Lager & Bremberg, 2005; Telema et al., 2005; Wang et al., 2006). In other words, the relation between video gaming and health is somewhat ambiguous.

Also in relation to the use of exergames in school there are differences of opinion. In a recent review of research on video games and health, Papastergiou (2009) argues that video games can offer "potential benefits as educational tools for HE and PE[5], and that those games may improve young people's knowledge, skills, attitudes and behaviours in relation to health and physical exercise" (Papastergiou, 2009, p. 603). However, from a critical point of view, Vander Schee and Boyles (2010) argue that exergames can instead be seen as a body pedagogy that produces certain narrow meanings about health, and that the uncritical implementation of exergames in school – under the pretence of

[5] HE stands for Health Education and PE for Physical Education.

solving the crisis discourse of obesity – is a problematic way of justifying the placement of commercial products in school.

Methodological approach

In this study, a systematic but non-comprehensive review of research and 'popular' literature was performed in order to explore the arguments for and against using exergames in school settings (Andrews & Harlen, 2006; Cornelius-White, 2007; Greenhalgh et al., 2005; Marston & King, 2006). The study includes summarising as well as synthesising features. As Quennerstedt (2011) argues:

> … a summarising approach can have the purpose of highlighting what has been explored and said within a specific field of research, and perhaps also look at the perspectives and methods used. A synthesis has a somewhat different ambition in that it aims to produce knowledge that reaches beyond the sum of its parts (Campbell et al. 2003, Greenhalgh et al. 2005). Individual studies are thus combined and integrated to a whole, bringing themes and concepts together to make new concepts and theoretical insights possible. (p. 663)

Our study uses both popular and scholarly texts in order to conceptualise the field of using exergames in school settings in new ways. The searches in the review were performed in September 2011 in the following full text databases: Cambridge Journals Online, DOAJ, EBSCO/Academic Search Elite, Emerald, JSTOR, MUSE, Oxford University Press, Journals Online, Sage, ScienceDirect (incl. back files psychology), Springer, Wiley and Google Scholar. Google was used for the popular literature searches. These databases cover most major journals in the field. Further, by means of so-called snowballing, the reference lists of included articles and web page links were examined for additional articles.

We used the following keywords and search strings in our searches: “physical education” OR “pe” OR “sport” AND “video game” OR “exergame*” OR Wii OR “computer game*” AND “school*”. The reason for the use of search terms is in relation to the purpose of the paper to explore arguments in school settings. The searches resulted in many thousands of hits for popular literature and over two thousand in the databases. The first 300 hits of each search were viewed until saturation was reached and few additional arguments arose. The inclusion criteria for an article to be incorporated in the study were that it related to the use of exergames in a school setting or concluded with explicit consequences for school settings. These criteria therefore excluded articles about exergames and the rehabilitation of injuries, the medical effects on adults, exergames as an activity for older people, the promotion of self-efficacy, video game design related to health and physiological studies of strength, balance or energy expenditure. In total, the review and synthesis of the literature included 26 journal articles and 61 popular articles.[6]

We are aware of the limitations of this study, occasioned by the sole use of keywords in the English language. There is consequently no comprehensive claim for the review, and the results of the study reflect the arguments in mainly English speaking countries.

The analysis of the literature is made in two distinct steps. In the first step, what Culler (1992) calls *understanding*, we clarified what the texts say about the use of exergames in school. Culler argues that this is an analytical strategy where the researcher asks questions that the literature so to speak insists on. Here the arguments for and against the use of exergames in school settings were

[6] Of the 61 popular articles included in the study, 34 were from the USA, 16 from the UK, 5 from Australia, 2 from Singapore, 2 from Sweden and 1 from Canada. Two articles could not be identified by country.

categorised into different themes and a search for patterns and regularities in the arguments included in the texts was conducted. In this part, the arguments were coded in terms of arguments for and against using exergames in school settings and subsequently organised into main themes. These themes are presented in the first part of the findings section.

The second step of the analysis – the synthesis (Greenhalgh et al., 2005; Quennerstedt, 2011), or what Culler (1992) calls *overstanding* – consists of a reading where we compare the understanding in step one with other possible ways to explore the literature. The synthesis is thus a shift between understanding and overstanding in terms of what the arguments do in relation to health and education. In this step, the assumptions made by both critics and advocates about what is taken for granted regarding health and education in relation to the use of exergames is critically explored. It is consequently not the validity of arguments that is the scope of the synthesis, but the construction of arguments in relation to health and education.

Arguments for and against using exergames in schools

In the review of both research and popular literature, most of the arguments for and/or against the use of exergames in school can be organised in relation to health and sport. In relation to health, one theme is dominant, namely that *fitness and obesity* include ideas about how children become obese, how they can improve their fitness levels, the importance of activities that are fun to do, deception and testing children's abilities and fitness. Two themes were identified in the research review that relate to health and where the lines of argument are against the use of exergames in school: that exergaming can damage children's *self-image* and that exergames involve a problematic *control over corporeality*.

In relation to sport, the two main themes of *skill acquisition* and exergames as an *alternative to traditional PE* were identified in both the academic and popular texts. A minor theme was also identified in the popular texts: that exergames can be used as a *technical solution* to problems of place and equipment.

The review of popular texts also displayed arguments that were more related to education. These arguments were all for the use of exergames in schools and were about using exergames as *educational tools* for behavioural management, inclusion of children with special needs and for developing critical ability.

In both the research and popular literature, *economic* arguments against introducing exergames in schools were identified; arguments that related to problems with the cost of purchasing, updating and repairing the games and with how to secure funding. This minor theme is not presented in detail in the results section, however.

Table 1. Themes in the arguments for and against the use of exergames in school settings. The items in bold type are major themes that were identified in the analysis.

Theme	Schools for	Schools against	Research for	Research against	Main argument
Fitness and obesity	**X**	x	**X**	x	Health-related arguments about making children more fit
Self-image				x	Health-related arguments about how exergames can damage self-image
Control over corporeality				x	Health-related arguments about exergames as part of the management of people's bodies.
Skill acquisition	**X**		**X**		Sports-related arguments about promoting sports- and motor skills
Alternative to traditional PE	**X**	x	**X**		Sports-related arguments about using exergames as an interesting alternative to ball games
A technical solution	x	x			Sports-related arguments about technical solutions to problems of place and equipment
Educational tools	x				Educational arguments about learning and discipline in school

Exergames can make children fit and help to combat obesity

The major line of argument in the academic articles and popular literature related to issues of fitness, weight control, stimulating positive activity

behaviour, the possibility to make children more fit, and, in the long run, helping to combat obesity problems in society. Although the majority of these arguments were for the inclusion of exergames in schools, there were also a few arguments against.

Arguments for the use of exergames in school revolve around the idea that they can provide a tool to increase students' *physical activity levels* (Fogel et al., 2010; Graves et al., 2010; Jacobs et al., 2011; Sell et al., 2010) and stimulate positive activity behaviour (Graves et al., 2010; Kiili et al., 2010; Macvean, 2011) in order to improve the health of today's youth (Papastergiou, 2009; US 1, 3, 4, 9, 14, 19, 41, UK 11, 15, 43). The basic assumption is that obesity, and particularly child obesity is a major risk in society (Kiili et al., 2010; Jacobs et al., 2011; Song et al., 2011) and that exergames can help to combat the obesity problem (Quinn, 2011; Papastergiou, 2009; Staiano & Calvert, 2011).

In this risk discourse, exergames are held forth as an effective *health intervention* for young people in terms of increased heart rate (Brox et al., 2011), promoting activity (Graves et al., 2010; Kiili et al., 2010; Quinn, 2011), weight loss and weight control (Jacobs et al., 2011) and energy expenditure (Graves et al., 2007; Sell et al., 2011). Hansen and Sanders (2010) conclude that, in their study, exergames were more physically demanding than normal PE-classes among fifth grade students. The games are especially regarded as a way of helping children who need it most, i.e. those who are overweight (Papastergiou, 2009).

Exergames are also seen as an interesting *educational intervention* in school. The targets for this intervention are primarily overweight children, as "a potential cure for overweight youngsters … to help the most at-risk youngsters out of their sedentary lifestyles" (UK 43) (Cunnigham et al., 2010; Graves et al.,

2010; Hansen & Sanders, 2010; Macvean, 2011; Papastergiou, 2009). It is all about getting them to move and encouraging them to get fit (UK 25). In this endeavour, exergames in school PE help to entice them to exercise (US 14), break into a sweat (US 8, 12, 41), make them out of breath (US 14) and be more physically active than they already are (US 4, 19, UK 15, 25). Accordingly, PE has to ensure that students get the physical activity they need during school hours (US 4, 14, 16, UK 15) and that they develop their fitness levels in terms of strength training. In relation to exergaming, an eight-grade student in the US said that: "it helps your arms and your biceps and everything … I have muscles … I even got abs too" (US 12). However, more often than not, the arguments are about how energy expenditure and weight management can be achieved by including exergames in PE in order to combat childhood obesity (US 2, 3, 19, 48, UK 15, 25). One school stated that there were a lot of ways of burning calories and that exergames were a great way of getting children to exercise (US 1). One US student also said that: "it's exciting, because you actually lose weight without even knowing it" (US 12).

In this vein, some schools argue that exergames is a way of making children physically active almost without realising it (US 2, 8, UK 15, 38). These arguments are about *tricking the students* into being more physically active. As one PE teacher stated: "the no.1 goal is they aren't going to realize they are really doing physical activity" (US 2). Another US PE teacher continued: "some kids play the Wii just because it is on a TV; they like the video game aspect of it and will do anything if it is on TV" (US 8).

An argument that is linked with issues of fitness and obesity reduction is that exergames are *fun and enjoyable* and that they are able to activate and motivate children and young people to move around under the guise of having fun (Cunnigham et al., 2010; Graves et al., 2010; Hansen & Sanders, 2010;

Macvean, 2011; Papastergiou, 2009) (US 2, 5, 9, 12, 16, 18, Canada 57). Several schools regard exergames as an engaging and enjoyable activity in which all students could happily participate. It reduces the "boredom of exercise" in a way that today's youth can relate to (Canada 57, US 16, 18). As one US PE-teacher put it (US 58): "It fits the kids' needs and their attention span … Plus it's fun". The games are also depicted as a great motivational tool in PE practice. (US 4, UK 11). One US PE teacher (US 18) supported exergames by saying that: "this is the first time in 11 years of teaching PE that I've had to kick kids out of class who don't want to stop exercising." Part of the enjoyment is also the idea that through fun and enjoyment the students more thoroughly engage in learning opportunities in PE (US 7). These positive learning experiences, or, as one school called it, 'the wow-factor' (US 1), are also dependent on the possibility of being successful in the activities at hand: "Regardless of what sport they do on the Wii, they experience success. It is good to see them experience success without the risk of being ridiculed" (US PE-teacher 8).

In research, fun is regarded as an important factor for how long a person will continue to be physically active (Staiano & Calvert, 2011). It is also important because fun activities like exergames can increase students' motivation for exercise in general (Fogel et al., 2010; Papastergiou, 2009). Exergames are also said to promote positive PE experiences, in that students choose active games rather than other activities because there is more choice, fewer rules and a better potential for success (Hansen & Sanders, 2010). They also enjoy the challenges of the games (Hansen & Sanders, 2010). Thin (2010) further argues that exergames are enjoyable because they are exciting and competitive. Exergames are thus promoted as an enjoyable tool that complements other PE activities (Papastergiou, 2009).

Some of the exergames include features like *measurement*, for example the measurement of balance, heart rate or coordination. These features are regarded as ways in which children can test themselves while exercising their bodies (US 40). In one US school (12), some of the children said that the exergames programme at their school had taught them a lot about their bodies and allowed them to track of their progress in terms of weight and skills levels. In one Australian school (60) the children recorded pulse rates, times for game races and dancing scores in order to measure their improvement over time.

However, there are a number of arguments against exergames in school within this theme (UK 11, US 17). For example, Nick Seaton from the Campaign for Real Education states that: "This smacks of poor discipline – the schools seems to be pandering to the whims of those who are lazy" (UK 11). Another debater, who was critical of 26 New York City middle schools using Wii fit as weight loss programmes, argued that the fitness value of exergames was around zero (US 17).

In a research context, the arguments against using exergames are mainly related to a problematic idea that PE should be a site for interventions in order to solve the obesity epidemic (Millington, 2009) and that exergames uncritically promise to reduce an "alleged public health catastrophe" (Vander Schee & Boyles, 2010, p. 170). Other lines of argument against using exergames within this theme are that exergames do not provide as much physical training as authentic sports (Graves et al., 2010) and that video-gaming per se encourages sedentary screen time (Staiano & Calvert, 2011).

Exergames can damage self-image

Two arguments against using exergames in school are identified in research in relation to self-image. The first is related to the avatar (the Mii) representing you

on the screen that, in some cases, is influenced by the actual weight, height and BMI of the player. In this regard, Seung (2009) argues that players who create an avatar that reflects an ideal embodied self show higher levels of interactivity in the game than those who create an avatar that reflects the actual embodied self. Further, Song, Peng and Lee (2011) report that seeing yourself mirrored on the screen in the games has a positive impact if you are satisfied with your body image, but has a negative impact if you are unhappy about this. Thus, the image on the screen potentially decreases exercise self-efficacy and enjoyment among people with body image concerns.

Exergames exert control over corporeality

A strong critical voice in the scholarly arguments against the use of exergames in school is how such games become part of the supervision and management of people's bodies in risk-based societies (Millington, 2009; Vander Schee & Boyles, 2010). Millington (2009) criticises how games like Wii fit tend to be regarded as fitness experts prescribing basic fitness solutions. In this management of bodies, the games diagnose behaviour by using balance, Body Mass Index (BMI) and chronological age as determinants of normal bodies and good health. According to Millington (2009), the ideal corporeality becomes the calcul(able) body. Millington as well as Vander Schee and Boyles (2010) further argue that bodily knowledge becomes politicised in terms of risk, and that deviance from a dubious measurable normality is something that must be corrected. In this vein, Vander Schee and Boyles (2010) problematize how students' bodies become commercial spaces due to the inclusion of exergames in school and that PE as a school subject becomes dependent on the companies providing the products.

Exergames support skill acquisition and transfer

Some studies explore how sport games can help students to learn different motor skills that can be transferred to authentic sports (Papastergiou, 2009). For example, Fery and Ponserre (2001) explored putting skills in golf and concluded that there was a positive transfer from playing golf video games to learning putting skills in real golf. Some studies also argue that exergames can improve students' visual-spatial skills, hand-eye coordination, foot-eye coordination and reaction time (Papastergiou, 2009). They further conclude that exergames can act as a gateway for sedentary individuals to improve their skills so that they can then become involved in 'real' sporting activities.

In the popular texts, most of the arguments relating to skill acquisition are for the use of exergames in school. Here teachers give prominence to how exergames promote motor skills like balance, hand-eye coordination, foot-eye coordination posture, agility and flexibility (US 4, 16, 41, Sweden 61), or social skills like sharing, taking turns, helping each other and teamwork (US 2, 4, 8, UK 32). It is also argued that as sporting skills are promoted, where teachers are able to teach the basics of games like tennis, bowling or basketball as simulators to learn the routes (Singapore 26, Australia 29, UK 32, US 58). For example, one Swedish six-grader said that "volleyball is good. There we can practice moves that work as preparation for real volleyball" (Sweden 61). Further, in the dance games the teachers draw attention to how students learn timing, rhythm, reaction time, sequence of movement, listening skills, dance moves and how to follow a dance routine (US 5, 27, Australia 60). Arguments are also put forward that skills are transferable between the game and the 'real' activity, such as balance and posture helping children's transition into yoga (US 5) and that sports techniques are transferrable to real sports (UK 32, US 58, Sweden 61).

Exergames are an alternative to traditional PE

In the research context, two specific articles argue that the use of exergames in school can provide fruitful alternative modes of physical activity in school PE (Papastergiou, 2009; Fogel et al., 2010). Papastergiou (2009) argues that exergames can complement traditional PE and facilitate self-practice, instead of being exposed to a competitive environment of team-based sports. Fogel and colleagues (2010) further describe how the students in their study became more physically active when exergames were used in PE compared to the standard PE programme.

Similarly, many of the arguments in popular literature are about exergames being a new and interesting alternative to traditional PE (US 39): "The old PE was just for the jocks. How about the other 90-percent of the kids?" (Chairman of a US school PE department) It is often the plethora of ball games in the PE curriculum that is criticised as not being relevant for most children, especially when they are not in school (Singapore 26). One PE teacher even stated that: "when you're talking about traditional PE with just football and basketball, that's so far out the window. We'll do sports skills, but we don't just teach basketball or football … That's why so many kids hated PE … We work on different things that they can do that don't always involve a ball" (US 5).

The arguments are thus primarily about how exergames can be an interesting complement to other activities. Some schools even argue that children prefer exergames to traditional PE (US 14). Exergames can thereby encourage students who would otherwise watch from the sidelines, or who consistently miss PE, to be more active (US 5). However, most schools arguing for the use of exergames emphasise that they should not replace other forms of PE. Further, the arguments are about how exergames can be a way of reaching students with an aversion to traditional games and fitness training (US 2, 18, 41, UK 32). Ball

games like dodge ball are often taken as a negative example in this regard (US 27). In this line of argument, the less athletic children are targeted and children in general are portrayed as gamers. One UK PE teacher argued (34) that exergames were "his way of beating the enemy at its own game. 'They're going to play video games anyway, we might as well steer them to the right ones'". Also, the embarrassment that some children feel in PE is criticised. Instead, "the screen allows for social inhibitions to be reduced. Kids would normally be checking out their peers, but they don't care because they're looking at what's on the wall" (PE teacher US 5).

There are also arguments against using exergames within this theme. Here the focus is on why exergames cannot be regarded as an alternative (US 3, 5, UK 11, 15, Australia 33). These arguments include the dangers of replacing team sports and group drills with exergames. In this respect, exergames are depicted as problematic, in that their use would mean social aspects of sport like teamwork, play, social interaction, sportsmanship and goal setting (US 3, Australia 33) being eliminated from the curriculum. Another line of argument is that it is better for children to play tennis on a real tennis court instead of a Wii console (US 5).

Exergames can be used as a technical solution to problems of place and equipment

In schools there are arguments both for and against the use of exergames in relation to *avoid being out in the difficult nature*. Arguments for relate to cold weather, in that exergames can be an activity that is more engaging than spending winter days outdoors or cooped up in a gym (US 1, 31), and to warm weather in terms of it being too hot and too sunny to be outdoors (Singapore 26, 30). One school official argued that: "they're using it with great success as a motivator during winter months, and on a day like today, when you can't go out.

There are a lot of ways to burn calories while you're inside" (US 31). However, there are also arguments against using exergames in school because they counteract children being outdoors. In these arguments, critics of exergames contend that unstructured free play in nature is a more positive way of being active (US 5). Also, the idea of doing sport in front of a TV indoors is criticised. In this critique, competitive sports outdoors is proposed as a positive alternative (Australia 29, 33).

It is also argued that exergames are used when there is *limited space and lack of equipment.* Some schools report that students can test activities that are normally unavailable to them, perhaps due to the lack of a gym, weight room, tennis court and sports field (US 2, 58). One PE teacher stated that: "It offers me some things that I can't do otherwise. Kids can get a feel of what it's like to do bowling without going to a bowling alley. Without a facility, I'll take everything I can get" (US 2). In another US school, the PE teacher suggested that Wii allows students from lower-income families to try things that they have never tried before, such as golf or tennis.

Exergames can be used as educational tools

In several schools exergames are used as *behavioural management*, in terms of reward and motivation for good behaviour (US 1, 4, 5, 14, 19, 49, UK 6, 11). Here, exergames are regarded as a 'carrot on a stick' that encourages children to enjoy exercise. They are also regarded as a way of motivating children who try to avoid PE by leaving their kit at home. One US school reported that they experienced improved behaviour and fewer discipline problems in PE after introducing exergames. Another US school added that fewer students were late for class because they enjoyed playing the games.

Some arguments also suggest that exergames could be used as a way of *including special needs students* in regular PE. These arguments involve the idea that some students can learn to navigate IT-technology while having fun and the idea to create inclusive classrooms in which students who have disabilities can be better integrated (US 22).

One Australian article also touches on how videogames are used in PE both as physical activity and as a way of *developing students' critical ability* (Australia 60). In the particular school referred to, exergames are used for media analyses of characters, music and the use of colours in the games in order to enhance students' media awareness in what is known as critical media literacy.

Assumptions about the use of exergaming in school

In the second step of the analysis – the synthesis – the assumptions made by both critics and advocates in terms of what was taken for granted in health and education in relation to the use of exergames is explored. In this analysis, the focus was on the arguments that could be identified in the texts and how the logic of these arguments could be critically elucidated in terms of why exergames like Wii 'teach' physical education in school.

Assumptions about health

One basic assumption in the arguments is that health is understood as something that is threatened by obesity, sedentary behaviour and lack of exercise. The assumption is that the western world is experiencing an obesity epidemic and that this epidemic is a major health problem in society that affects everybody, everywhere. Health is thus perceived to be a lack, a deficit or an absence of something, such as not being obese and the absence of obesity related diseases. In relation to this quite unsubstantiated claim, critical scholarly voices have been raised against the ideologies and norms that constitute what is often referred to

as the childhood obesity epidemic (Gard & Wright, 2005; Evans et al., 2004; Rich & Evans, 2005; Kirk, 2006). This critical debate has raised questions like: Is it an epidemic? From what is this epidemic constituted? Can we blame video- and computer gaming for this? Is everybody inactive? What does BMI really tell us? The critique is especially strong when it comes to turning obesity into an educational issue (Evans, 2003; Johns, 2005; Kirk, 2006; Quennerstedt, 2008; Vander Schee & Boyles, 2010). The arguments around the use of exergames, however, are, with a few exceptions (Millington, 2009; Vander Schee & Boyles, 2010), quite estranged from this critical debate.

In this vein, health is not either discussed in line with the World Health Organisation's (WHO) definitions as physical, psychological and social well-being (1947, 1986) or in line with similar descriptions of health that are visible in PE syllabi in countries like Australia, New Zealand or Sweden (Quennerstedt, Burrows & Maivorsdotter, 2011). There is consequently a clear biomedical, pathogenic notion of health in the arguments (Quennerstedt, 2008). Exergames are thus unproblematically included as a means to solve childhood obesity.

Another assumption in relation to health is that physical activity is a basic human need and that it is unnatural for people in general – and children in particular – to pursue a sedentary lifestyle. The unquestioned solution to this problem is increased physical activity at a moderate level and more energy expenditure for all. Weight is therefore a problem that everybody should be concerned about. As the consequences of this alleged obesity epidemic (cf. Evans, 2003; Gard & Wright, 2003; Kirk, 2006) affect society at large, it is thought that schools should be involved in solving the problem. Accordingly, in this societal health effort, the use of exergames in school becomes a reasonable solution in which energy in versus energy out, not educational values, becomes the rationale for the intervention.

Assumptions about education

In terms of exergames in education, the assumptions in the analysed literature are to do with behaviour modification as a pedagogical practice. The games are thus introduced as a teaching aid in order to modify children's unwanted behaviours. This modification is about establishing 'good' habits regarding physical activity and sport, and also disciplining children into taking responsibility for their own health. However, it is seldom about learning in a wider sense, in terms of new ways of acting, new familiarities, new relations, new connections, new and more possibilities, increased complexities or a changed participation in knowledge and value communities of practice (see e.g. Hodkinson et al., 2007, 2008; Lave & Wenger, 1991; Säljö, 1998; Wickman & Östman, 2002). The exergames thus in an unquestioned way become a teaching aid supporting more behaviouristic ideas about learning, a view that is not in line with many national curriculum documents.

In addition, the direction and the content of the behaviour modification seem to be taken for granted. In relation to health, the content is taken for granted in that PE is regarded as a school subject with the sole aim of enhancing physical activity levels for all by means of fun and enjoyment. In the arguments, the obesity problem is put forward as something that can be solved by more physical activity and with more physical activity in PE. These activities have to be fun and enjoyable so that teachers can trick children into being active. It is particularly important to lure sedentary children. The problem with sedentary behaviour in young people can accordingly be solved if we offer and let them find forms of activity that are fun-filled and enjoyable enough.

In relation to sports, a content that is about 'real' sport, with its techniques, rules and values, is taken for granted. It is the real sport that is supposed to be learned, not movement in a wider sense, where the finished product and what a certain

move means or looks like is open to negotiation (Larsson & Quennerstedt, 2012). This echoes for example Kirk (2010) and Mordal-Moen and Green (2012) who argue that PE in school is almost exclusively about the teaching of sport skills.

The analysis also reveals that the arguments involve a certain view of the child – the student – in education. Our analysis echoes Vander Schee and Boyles' (2010) arguments in relation to the use of exergames in schools, which are that: "students are lazy, overweight and addicted to video-gaming" (p. 177). The basic assumptions in the arguments that we analysed in our review are that society and schools have to save children from themselves. They are even described as 'the enemy'. The children are pinpointed as unmotivated to get away from video games, so unless PE in school supports their (un)natural need to sit still in front of a screen and, through exergames, deceive them into being physically active, then it will be difficult to save children from the terrors of obesity. Society and schools will consequently need to step in and take over the responsibility for their health in order to, at a later stage, hand it back to them.

Concluding remarks

The purpose of this systematic review and synthesis has been to explore the arguments for and against using exergames in school settings and, in so doing, bring themes and concepts together to facilitate new insights into this field.

In this article we have shown how health, in relation to the question of why exergames are used in schools, is outlined as the absence of obesity and obesity related diseases. Health is under threat in contemporary society and the solution to develop health is more physical activity for all. Schools accordingly become part of this solution, and bringing in exergames as a new and exciting way to exercise seems to be a logical and fresh step to take as a common sense solution.

We would, however, argue that these arguments are potentially flawed in relation to both a wider notion of health visible in many national curricula (Quennerstedt et al. 2010), and also in relation to contemporary ideas about education and educational values. The question thus needs to be explored and discussed further, however, with the inclusion of critical arguments like those presented in this article.

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50 years with Integrated Mental Training

Lars-Eric Uneståhl

Abstract: Integrated Mental Training (IMT) was developed during the 1960´s, based on research findings from three areas: Alternative states of consciousness, Mind-Body relations and the possibility of obtaining sustainable changes in both Mind and Body through systematic training. The practical training programs were constructed for- and evaluated in- the Sport area, but spread during the years to most areas of Society. This article gives some examples of Mental Training contents and effects and finish with some recent investigations about "biological ageing" in relation to elite sport and in relation to Mental Training.

Keywords: Mental Training, Elite Sport, Self-Hypnosis, Mind-Body, Sport and Ageing.

Definitions

Integrated Mental Training (IMT): A systematic, long-term, developmental and evaluated training of mental skills, attitudes and processes aiming to Excellence (Peak Performance & Wellbeing).

Integrated Mental Preparation (IMP). Pre-trained Mental Skills and Procedures, which are released at certain pre-decided occasions. One example of this is the creation of a trigger (a conditioning procedure between a self-selected stimulus and a desired response), which will release the response automatically if the trigger is a part of an athlete´s precompetitive preparation. The trigger can also be used voluntarily (if needed trigger).

Mental Strategies (MS). Mental strategies, techniques and procedures used purposely in a situation (competition etc.) to influence Body and Mind.

IMT and IMP are based on an Alternative Mind State (AMS), a Controlled and Positive Self-Hypnotic State mainly used for Recovery and Goal-directed Programming. To avoid common misconceptions about the term hypnosis I have chosen to make an operational definition of this self-hypnotic state, calling it the Inner Mental Room (IMR)

IMT consists of a future-oriented, goal-focussed, action-based and experiential training directed to everyone who wants to improve in Sport and Life. The training is based on research about Success factors (external and internal) and about methods for providing effective and sustainable developmental changes towards Excellence.

Short overview

Being an athlete starting Psychology with the goal of a Ph.D. it was natural to have an interest of finding out more about how the mind affected performance and how an alternative state of consciousness like "flow" could create a "relaxed effectiveness".

A third interest was to investigate the effect of systematic and long term training on Mental Processes important for Peak Performance but also for areas like Personality, Life competence (social, emotional etc.), Body systems like the Immune defence, etc.

A decade of research led not only to a Ph.D. but also to the creation of "Integrated Mental Training" (IMT) which now 50 years later has been used in

Sport, School, Work and Leadership, Health and Clinical areas and not least for Personal development.

The development of IMT programs and methods and the application of Mental Training in various areas of society has been combined with theories and models like the developmental model, the training model, the feedback model and the psycho-neuro cybernetic model (Schill, G. & Uneståhl, L-E., 2013).

IMT was introduced in Sports and in the School system during the 1970´s, in work, Health and Clinical areas during the 80´s and in Personal- and Leadership development during the 90´s. During the 21st century there has been an integration of Mental Training with Coaching, Positive Psychology, CBT and Mindfulness. IMT, the Swedish model of Mental Training, had earlier been used in English speaking countries and Russia (Sovjet Union) but during the last 10 years it has been translated and used in many other countries like India, Kosovo and Irak. One example there is a project going on since 2010 together with the government in north Irak with the title: Mental Training for Peace - From Inner Peace to External Peace.

Background Research

One of the research areas in the 1960´s which led to IMT was "Alternative states of consciousness" in combination with Ideal States (like IPS - Ideal Performance state). It has not been possible up to day to define consciousness in a way which experts and researchers have agreed upon. It has on the other hand been much easier to establish definitions and criteria for ASC.

ASC is usually expressed as "Altered States of Consciousness". However, a common question will be: "Altered from what?". Common answer: "From our *normal* state". Comment: "Thus, the altered state is an abnormal,

pathological state". I therefore decided to decipher ASC as "Alternative States of Consciousness" different from the "Dominant State of Consciousness" (DSC). Then sleep, dream, hypnosis, flow, etc. will be natural and normal alternatives to DSC. As ASC like Hypnosis also provides ASC 2 - "Alternative Systems of Control" and gives changes which are both quicker, stronger and more sustainable, it was natural to make Hypnosis (in the form of self-hypnosis) to an important part of IMT.

In order to investigate Hypnosis I started the Institute for clinical and experimental Hypnosis at Uppsala University 1965 leading to 32 research reports (Department of Psychology). The series of research reports continued in the 70`s and 80`s at Örebro College of Sport (GIH) and Örebro University and after 1990 through Scandinavian International University. Most of this research had to do with the Mental Training either to investigate background variables or to measure application effects. Here are some examples:

A. Hypnosis and Hypnotic phenomena - Investigations concerning:

1. The nature of hypnosis and Self-hypnosis (Uneståhl, 1968; Uneståhl, 1973a; Uneståhl, 1973b; Uneståhl, Appelgren, 1974; Uneståhl, 1975; Uneståhl, 1976; Uneståhl, 1982)
2. Spontaneous trance. (Uneståhl, 1969; Uneståhl, 1971 b; Uneståhl, 1973; Uneståhl, 1982.)
3. Posthypnotic suggestions. (Uneståhl, 1970; Uneståhl, 1971 a, Uneståhl, 1972)
4. Posthypnotic emotions as reinforcers. (Uneståhl, Berglund, & Gaunitz, 1971; Uneståhl, & Peterson, 1976; Uneståhl, Andersson, & Joelsson, 1978)

B. The Effects of Integrated Mental Training

1. In the Olympics. (Uneståhl & Buuts, 1977)
2. In Sport in general (Uneståhl, Johansson, & Nygårds, 1971; Uneståhl, 1973a; Uneståhl, Hultin & Sundgren, 1975; Uneståhl, 1979 a, b.)
3. In special Sports like:
   - Swimming (Uneståhl, Andersson & Joelsson, 1978; Uneståhl, & Strandh, 1981)
   - Crosscountry skiing (Uneståhl, Apelqvist & Gustafsson, 1981)
   - Alpine skiing (Uneståhl, Aspelin & Hermansson, 1979)
   - Shooting (Uneståhl & Gustavsson, 1975; Uneståhl, 1977)
   - Figureskating (Uneståhl, Bodin & Poulsen, 1981)
   - Soccer (Uneståhl & Ingvarsson, 1981)
   - Bowling (Uneståhl & Breife, 1981)
   - Running (Uneståhl & Thor, 1981).

Some examples from the findings in the reports mentioned above will be summarized below:

1. PE-students ”shooting” 30 mental basket free shots a day (in IMR) made a significant improvement (compared with a control group) and improved as much as those making 30 physical training shots a day.
2. An experimental group of 100 bowlers showed clear personal but small performance improvements compared with the hundred in the control group after 3 months of IMT-training, but after that the difference also in performance became continuous bigger during the investigation period of 3 years. A follow up 10 years later showed that one bowler in the experimental group had become the world number one, a position he held during 3 years.
3. Objective measures and subjective ratings from alpine ski races showed that the worst results were related to active thoughts of various technique details while the best results came after a. hypnotic race programming, b. handing

over the race to the body and c. supporting the body with a ”positive emotional rhythm production”.

4. After reaching the finish line in the national downhill championships the skiers were asked to ski the race again, now mentally. The best skiers had more similar time in the physical and mental skiing.
5. Physical training (swimming a.o.) became more effective by replacing the traditional negative and delayed feedback with a positive and immediate feedback by earphones using operant techniques, where the ”right performance” was reinforced through signal released posthypnotic positive emotions.
6. Posthypnotic induced variations of mental states and attitudes produced a performance variation, measured through isometric strength. The ”normal” maximum strength in the subject could be increased with 18% when the subjects had the best attitude to themselves (self-image) and an optimal attitude to the task (goal-image)
7. A jet-lag study with the Swedish National Swimming Team in connection with the preparation for the Sydney Olympics showed better effects on sleep and performance with IMT compared with Melatonin, Placebo and Control.

The Mental Training Mind State (Inner Mental Room)

The base of IMT-training is the ”Inner Mental Room”(IMR), which is an operational definition of an altered or alternative state of consciousness (Self-Hypnosis).

Hypnosis, which is a state of focused attention, will enhance mental processes like thoughts, images, emotions, behaviours and performances. An athlete in flow show the same alterations as in hypnosis: Perceptual changes (slow motion, bigger targets, etc.), Concentration/dissociation, Effortless effectiveness and efficiency, Control by images and triggers, etc. (Uneståhl, 1982; Uneståhl, 1996)

As Mental Training is based on an hypnotic like ASC, called the Inner Mental Room, it was important to find the criteria of IMR. As most behavioral and physiological measurements reflects the contents of IMR and not the IMR in itself (Uneståhl, 1971; Uneståhl, 1982) we decided to look for neuro physiological criteria (most of this research was made in the Swedish-Russian IMT Research project 1991 - 2002 and with professor Pavel Bundzen from the Institute of Physical Culture in St Petersburg as the main leader of the project)
The patterns of EEG neuro-mapping and the spectral analysis of EEG point to the fact that the mental training state (”Inner Mental Room”) is characterized by the following neuro-dynamic correlates (Unestahl, & Bundzen, 1996; Bundzen, Leissner, Malinin, & Unestahl, 1996)

1. An intensification of theta-activity in ante central sections of the brain and smoothing of alpha-activity in the frontal-occipital direction.
2. A decrease of alpha activity in frequency 10-13 and an increase of frequency 7-9.
3. A disappearing of hemispheric asymmetry and a synchronisation of total hemispheric activity (The "holistic brain").
4. The subsequent analysis showed that the EEG frequency spectrum in the retrocentral sections of the cortex represents a set of subdominant and harmonic bound frequencies in the range of delta, theta, alpha 1 and 2 and beta-rhythms. Thus, the polimodal frequency harmonization of cortical bioelectrical activity whose basis may be considered as so-called ”golden ratio” or ”section divine” (1,618) has been shown to be one of the specific neuro-dynamic correlates of the ”IMT-state”.
5. The quantitative and the qualitative changes of brain activity during and after IMT-training (the "holistic" and the "harmonic" brain) seems to change the informational system in such a way that the body through decreased ”reality testing” interpreters internal images as ”real”. The differences between a

”physical event” and the image of such an event seem to diminish or disappear in the ”Inner Mental Room”. This may be the main explanation for the significant impact which the IMT-training has on Sport and on various psychosomatic and body-related problems.

6. The neuro physiological differences between top-athletes and athletes on lower level was most clear during competitions. We measured for instance EEG (Omega potential) for two archery shooters during competition, one average and one world record holder. Ten seconds before the shots it was a similar picture for the two competitors with the left brain more active than the right one. At the time of the shots the average shooter had still the same difference while the world champion had integrated the left/right so that the activity was on the same level and inside the "optimal zone". When the world champion was asked: "How do you know when you are going to shoot"?, she answered: "I do not know but my body knows. The shots come by itself when my body is ready. I do not have to think". This "flow state" will also trigger an ideo motor release of the shot.
7. In an analysis of this flow and IMR state we happened to take the ratio between the various EEG frequences and detected to our surprise that four of the ratios was very close to the golden number or section divine - 1.6, the symbol for harmony. (Figure 1)

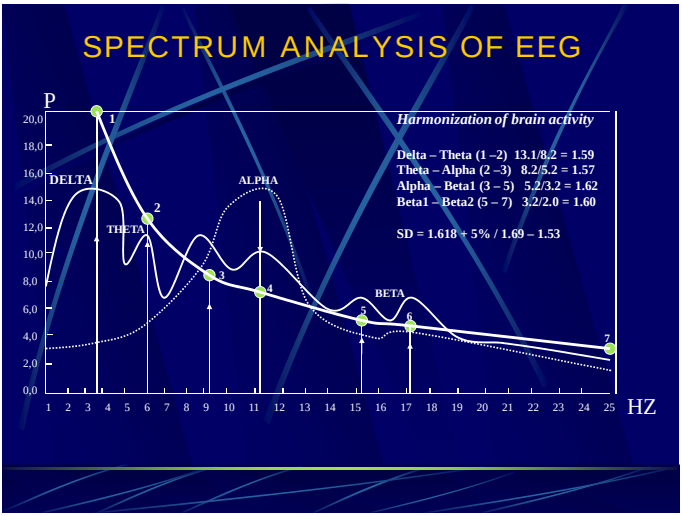

Figure 1: Spectrum analysis of EEG.

1.618.... has been the ratio for harmony, balance and beauty since the beginning of mankind (the Pyramids, Greek temples, Buildings, Art, Animals, Human body, Face, DNA, Solar systems and NASA:s measurements of the radiation indicates that the whole universe is based on this ratio). So besides the "leveling out" of EEG activity (Fig. 1b), making the brain work a unit ("holistic brain") we have added the "harmonic brain" concept for the ideal Mind-Body relation (Uneståhl, & Bundzen, 1996).

PEAK Performance Muscular State (PPS)

1. Investigations of the effects of posthypnotic induced variations of Mental states on Performance, measured with maximum isometric strength showed a performance increase of 18% when the athletes had an optimal self-image and optimal goal-images. The biggest decrease of performance was during relaxation. (Uneståhl, Henriksson, & Högström, 1981) This is

understandable as relaxation means "absence of tension" and as muscular tension is demanded for all movements.

2. Based on Leif Janssons investigations of the optimal muscular state in the Swedish Olympic and National Teams in different Sports (Jansson, 1995) it was possible to show that the crucial thing differing national athletes from lower class athletes was the ability to relax the antagonist muscles. The same was true when we compared national elite (the violinists in the Swedish Radio Symphony orchestra) with lower level violinists. There was also a difference between National elite and world class musicians (Chicago Symphony orchestra) in the ability to relax the antagonist muscles. (Jansson 1995; Uneståhl, 1998) I therefore introduced the new English term *relaxense* for the ideal Performance state, and defined it as optimal tension in relevant muscles (synergists) and relaxation in irrelevant and antagonistic muscles. (Uneståhl, 2013)

   Training**:** Learning *relaxense* starts with 5 weeks of systematic and progressive relaxation training in order to establish, learn and automate a complete relaxed state in every muscle. Step 2 is to create images of ideal movements, which will create an optimal tension and activation of the synergist muscles, while the antagonist muscles remain relaxed (Relaxense). Step 3: "Letting it happen". (Uneståhl, 1979; Uneståhl 1998)

Recovery

Mental Training is most known for enhancing change in areas of personal growth, sport performances, etc. However, an area which has received much attention the last years is "Recovery". Today there are many indicators that exhaustion and chronic fatigue are more related to lack of recovery than with hard work or training.

There are several parts of the mental training which increase recovery skills, starting with the basic mental training, which both provide the base for personal growth but also play an important role to learn effective rest and recovery skills. The first part of the basic mental training, the systematic and progressive muscular relaxation, has two main purposes. One is to decrease or remove the basic tension level, which leads to a 'relaxed effectiveness' model, which promotes health (improved rest and recovery) as well as high performance (relaxense). In learning relaxation the spontaneous relaxation effects of exhalation are used by developing triggers, at the same time as the thought is captured by the relaxation's physiological meaning for an emotional experience of unison and total muscular relaxation. The systematic trained connection between desired goals and relaxation results in a well-trained person in immediate and total systemic muscular relaxation, irrespective of the situation the person is in. In this manner, trigger-mediated relaxation according to the IMT-model, offers increased personal control over situations which during other conditions trigger stress related reactions. (Uneståhl, 1979, Uneståhl 1998, Unestahl, Bundzen, & Gavrilova, 2004)

Another application, important for recovery, is the use of triggers to mentally leave or dissociate from energy demanding situations. (Uneståhl 2000; Uneståhl 2001)

The third important application has to do with recovery during sleep. However, Recovery during sleep is related to the quality of sleep and not the quantity. Good sleep quality means a cyclic pattern, for grown-ups consisting of 40- 50% light sleep, i.e. stage 1-2, 25-35% deep sleep or delta sleep, stage 3-4 and 25% REM sleep. The different stages should succeed smoothly into one another without too many shifts or arousals caused by specific sleep disturbances such as for instance snoring, apneas, pain, worries or mental stress. During light sleep

we are very sensitive to such factors which might cause a deficiency of the important deep sleep leading to a lack of spontaneous recovery. This means that 4 hours of deep sleep gives significant more recovery than 8 or 12 hours of light sleep. The first 3-4 hours of sleep (deep sleep level with EEG delta waves - stage 3-4) results in a spontaneous recovery of important bodily functions (growth hormone etc.) (Wallskär & Åkerstedt, 2008). However, the deep sleep is one of the first functions to be disturbed by stress.

The tragic thing here is that when someone gets sick (burnout) due to stress and has to leave work, the recommendation is to stay home, resting and recovering. However, the ability for that has diminished or disappeared. The person can sleep 10-12 hours and wake up as tired as before sleep. When the deep sleep disappear the number of sleep hours doesn´t matter.

As no medical drug can bring the deep sleep back there is a risk that the problems will remain for months or even years. Thus, mental training becomes very important to bring back the ability to rest and recover. Stress increases the basic tension, which seems to disturb the deep sleep. Our recommendation is to start the basic mental training immediately after the sick leave to prevent the problem to be chronic and long lasting.

We are just now making a 3 year study to investigate the recovery effect from a combination of Mental Training and a special massage chair, called the "recovery chair". The release of oxytocin is one of the measures (Skövde högskola & KK-foundation).

Ideo-motor training

Mental images of movements creates subliminal activation of the muscles which are involved in the execution of the movement. The muscle reactions can be

measured with EMG and makes it possible to study the "muscle work" during "mental performances" (Uneståhl & Peterson, 1976). There are also practical applications of the ideo-motor relations.

One application concerns individuals with movement restrictions (Sport injuries, spinal cord injuries, etc.) who are instructed to make imagery exercises. Even small muscle activation can slow down muscle deterioration. Besides, mental exercises often create a mood elevation which may speed up the recovery. A pilot study - so far not published together with the head orthopedian at Örebro university hospital (Bo Althoff) showed positive postoperative effects after a number of orthopedic surgeries. An article from Luleå Tekniska högskola indicates improved muscular functions also in stroke patients (Askljung & Regnell, 2011)

Another application concerns the possibility of learning sport without physical training. A pilot and still not published study in Gothenburg with control group (10 Ss) and three experimental groups (with 10 Ss in each group).

1. Traditional Training with a golfpro. 1.5 hour/week for 3 months)
2. Learning by mental modeling in IMR 1.5 hour/week - 3 months
   (In IMR the Ss experienced playing golf through special recordings of one top world golfer.) The Ss were instructed to avoid any analysis and just imagine that there were the ones playing on the screen.
3. Combination 1 and 2, half of each for 3 months.

   The 40 Ss were tested at the same occasion and in the same way after 3 months. All of the 3 experimental groups showed significant improvement compared with the control with group 1 best followed by group 2 and 3. However, the differences between the 3 groups were small and not

significant. The best result of the 40 participants had a 40-year women belonging to exp. group 2.

Examples of Peak Performance results in Sport

IMT was introduced in Sweden 1969 and the training programs were developed and evaluated during the 1970`s. The first major test was the Olympics in Montreal where Sweden was the only country who had a mental trainer as a part of the team. Here is some figures from the next Olympics, 1980.

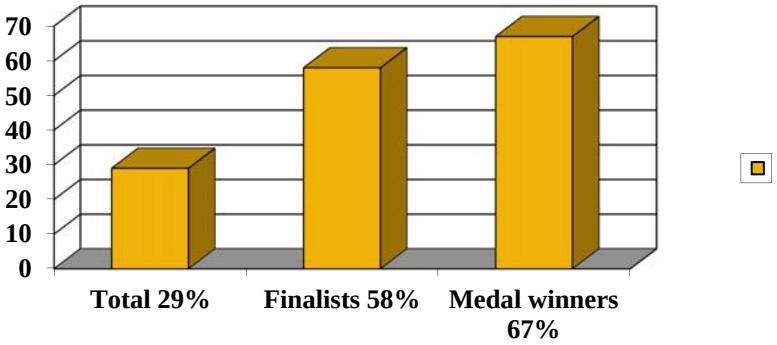

Figure 2. The Olympics 1980. Percent of athletes who had used systematic Mental Training

From 1980 the Mental Training was handed over to the athletes and trainers without the need of having a mental trainer present during training and competition. This made it possible to integrate physical and mental training, which on the other hand made it difficult to know how much of the results that had to do with the mental training. However, in many books (Unestahl, 1979a, 1981, 1985b, 1989) and in many newspaper articles a large number of olympic and world best athletes are claiming that the mental training was of significant importance for the results. Recently, both of the two main candidates for the 2013 feat gold (Svenska Dagbladets bragdguld) Johan Olsson (skiing) and Henrik Stensson (golf) described the Mental Training as a main factor behind

the results. Some athletes and trainers have also become interested to become mental trainers themselves (like Johny Modigh with countless Swedish championships in Shooting or Nanne Bergstrand, twice the soccer trainer of the year)

Integrated Mental Training and Psychosomatic Medicine

Much research and many articles and books has been written about the effect of IMT in Performances (Sport and Performing Arts). Less known is the psycho-neuro-physiological and immunological effects of systematic mental training.

Here are some of our findings

Among the changes that happen during and after IMT-training will be mentioned:

- A significant reduction of the level of cortisol and free fat acids in the blood plasma
- Decrease of sympathetic-adrenal system activity by a simultaneous and significant increase of the level of endogenic-opiatic neuro-peptides and age-dependent hormone-dehydroepiandrosterone.
- Immuno modulating effects expressed in the normalization of cellular and humoral activity
- Optimization of the interaction of ergo- and tropho-tropic subsystems of the cortico-visceral self-regulation. (Uneståhl, Bundzen, Gavrilova, & Isakov, 2004; Johansson & Uneståhl, 2006).

Three different studies have all showed an improvement of the immune system (measured with T4/T8 cells) after Mental Training. It was also shown that the Immune deficiency, often associated which with hard training and overtraining, could be prevented by Mental Training. It was also shown that mental training could not only prevent a decrease of the immune efficiency but also raise the

level above the normal level. This effect seemed to be related to one part of IMT – the Life Quality and Emotional Training with elevated moods, humor, joy, happiness. (Bundzen, Gavrilova, Isakov, & Unestahl, 1998; Johansson, & Unestahl, 2006).

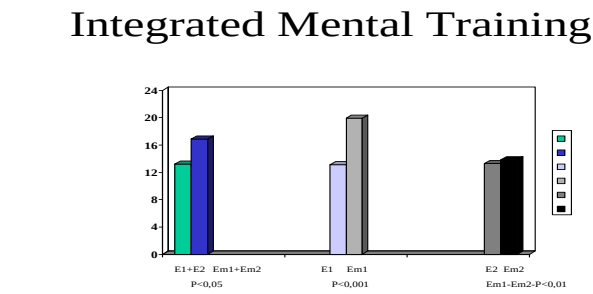

Figure 2: Integrated Mental Training.

It has been known for decades that both Stress and depression has an impact on the Immune system. Subjective reports of stress are generally not associated with immune changes while brief naturalistic stressors (exams, competitions etc.) tend to suppress cellular immunity and while chronic stress are associated with suppression of both cellular and humoral measures. (Segerstrom & Miller, 2004).

The findings that elevated moods and positive feelings could prevent the Immune deficiency syndrome and even raise immune efficiency above normal has been used in practical clinical work, for instance when Mental Training is used as a complement to medical treatment of cancer. As the common reaction to cancer is stress and low mood levels (depression), which decrease the activities of the "killer cells" it has been important to help the patients to focus

on things, which strengthen the immune system (joy, happiness) together with mental programs of a healthy future. (Unestahl, 1992; Unestahl, 1998; Unestahl 2000; Unestahl, 2001.

Integrated Mental Training for Psychosomatic Problems

Mental Training has been applied to most behavioral and Psychosomatic problems. Here are some examples:

Sleep problems: A Mental Sleeping telephone line was established at one hospital (Motala). People received a mental sleep induction program and after some months there was a significant decrease of the pharmacies sale of sleeping pills compared with another town (Kalmar) as control. However, so many people started to phone that connections started to be blocked, after which the same program became available through the pharmacies instead (Uneståhl, 2010)

Cancer: 300 cancer patients were matched into control and experimental group with the same medical treatment but with mental training added to the E-group. However, the ethical committée at the hospital demanded us to give the control group the same treatment. We therefore had to change the design and have the C-group wait 3 months for the mental training. We could see a trend of lower mortality in the E-group however not significant differences probably due to the short investigation time (Uneståhl, 2010)

A doctoral dissertation in Örebro using Mental Training programs (IMT-tapes) during general anaesthesia showed significant better postoperative improvement and recovery of hysterectomy patients. (Nilsson, Rawal, Uneståhl, Zetterberg, & Unosson, 2001). 70 patients with tinnitus from Sahlgrenska University hospital in Gothenburg did the regular Mental Training during 3 months. Very few of the

patients got rid of the disturbing sounds but many of them got rid of the problems by learning to move the sound away from the awareness. By placing the sound outside DMT (Dominant State of Consciousness) they learned to be unaware of the sound. However, if they were asked to bring the sound into the awareness area they could do that. (Uneståhl, 2010)

The same method has been used for patients with chronic pain. Studies made at the hospital in Helsingborg show that even if the chronic pain was still there ("somewhere") the patients had learned to dissociate and detach from the pain and refocus on more positive things in Life. (Olsson, 2002; Olsson, 2003)

A number of studies by those who are licensed Mental Trainers have been made in regard to areas like weight, smoking, asthma, phobias, delivery, etc but will not be mentioned here. In summary, however, it is possible to say that the use of Mental Training in clinical areas is very Cost-effective as the training is made by the patients themselves after a short instruction. Besides, so far we have not seen any negative side effects (Uneståhl, 2010)

Elite Sport and Biological Age

Based on common comments that elite players in soccer and ice-hockey often looked “older” than non-players of the same age, we examined the research literature but found that very few studies had been conducted in the area of elite sport and biological age. We therefore decided to conduct a pilot study comparing professional elite ice hockey players (EP) (22 males, M = 24.7 years) with a cohort of amateur players (AP) similar in age but from a lower competitive level (17 males, M = 25.4 years). Subjective ratings of motivational, attitude and emotional factors were combined with measurements of blood concentrations of DHEA-S, cortisol and the DHEA-S/cortisol ratio. DHEA-S and the DHEA-S/cortisol ratio were significantly higher ($p<0.01$)

while cortisol was unaffected in the AP compared with the EP group. Interpretation of the differences in adrenal hormones level indicated a biological age difference of around 10 years, with the EP group being older. Also, significant differences in the subjective ratings were noted with a more positive self-image, goal-image, attitude and emotions noted in the AP-group. As we have earlier demonstrated a decrease in biological age with mental training of these factors, further studies have to determine how much the higher biological age among the EP-group is due to

1. Exercise factors, where too little and too much may be one reason. All subjects in the EP group were on daily scheduled individual and team-based extensive training program except on match days and remained unchanged during the study. The training program during non-match days, comprised of two daily sessions of two hours each. Long-distance and exhausting continental bus transfers provided the transportation of the professional team players away from home competitions. Two competition games were performed on regular weekly basis during the season.

   The players in the AP group followed a low or moderate training and competition program. Scheduled training was performed twice weekly for two hours and a competition game only once a week. Due to the local character and short-distance of transportation at competitions, co-transportation of team players was done by car.

2. Experiential/personal factors. Subjective self-reported measurements were made with the Swedish “SMAK” test, measuring the dimension: Self-image (S), Goal-images and Motivation (M), Attitudes (A) and Emotions (K) and showed more positive levels in all variables among the team from a lower level.

3. A combination of these and other factors.

   In addition: Both groups were lead by professional coaches. The study was done during the second part of the winter season. None of the participants were taking medication.

Further research: As this is the first study comparing biological ageing in Sport it will be interesting to compare different sports in this respect. It will also be interesting to make more studies about longevity among athletes on different performance levels, especially among team sports.

Mental Training and Ageing

The anti-ageing industry has exploded the last decade and the biggest part of that has been the pharmacological part. However, there are many indicators that mental factors also play a big role in the ageing process. Examples of such factors are Stress levels, Life motivation, Identity, Expectations, Goal-programming, etc. As all of these factors are parts of Mental Training it should be rather natural to investigate if and how much mental training could influence the speed of ageing.

We therefore decided to look at the aging process in a mental training group in comparison with a control group. We examined the influence in healthy subjects of self-hypnosis and mental training taught in group sessions, with individual training in between according to a standard protocol, and integrated in daily life and work for six months.

The measurements were alteration in plasma concentration of the stress hormone cortisol and the ‘anti ageing’ hormone dehydroepiandrosterone sulfate (DHEA-S). Previous studies have shown that stress and serious disease are associated

with increased ACTH secretion. Increased production of ACTH stimulates a shift from androgens towards glucocorticoidal secretion in the adrenal glands. This can mainly be seen as a pronounced increased level of cortisol and lower DHEA-S. Also, a decrease in the cortisol/DHEA ratio and low DHEA-S has been correlated with the suppression of cellular immunity and the severity of disease.

DHEA-S and cortisol were analysed in twelve healthy men and women, with six individuals randomly divided equally between experimental and control groups.

The contents of the training for the experimental group was as follows:

1. Muscular progressive relaxation and Tension regulation
2. Self-hypnosis (IMR)
3. Mental technique training (self-suggestions and imagery)
4. Self-image training (Self-esteem and Self-confidence);
5. Goal-image training (goal settings translated into images);
6. Motivation (goal programming, mission, meaning and energy);
7. Creativity (spontaneous problem solving and cybernetic solution processes);
8. Optimism and attitude training (positive interpretation of 'reality');
9. Mental toughness training (decrease of fear, increase of courage);
10. Emotional training (identification, selection and 'trigger' control of joy, happiness)

In the experimental group DHEA-S was significantly increased by 16% ($P < 0.05$), whereas plasma DHEA-S in controls followed an expected age-related decline. Cortisol was reduced by 12.3% ($P < 0.05$) in the experimental group, but remained unchanged in the control group. The ratio between plasma concentrations of DHEA-S and cortisol that reflects stress-related alteration in

the adrenal secretion between androgens and glucocorticoids, increased significantly by 27.8% ($P < 0.05$) in the experimental group with a reduction of 8,2% in controls. The increase in plasma DHEA-S under experimental conditions was equivalent to a range normally found in individuals 5 to 10 years younger. (Johansson, Uneståhl, 2006)

A reduction of 5-10 biological years in 6 months may seem too good to be true and as this was a pilot study it has to be repeated with a larger sample. However, as we have seen in previous studies that the stress hormone cortisol will decrease rather quickly with mental training and as stress and ageing are related we believe that mental training can be regarded as an anti ageing intervention in the future.

Future studies will show if Mental Training also has a longevity effect. Regardless if this will be the case, increased Life motivation, Life joy and Life quality should be enough reasons for everyone to start a Life long journey together with Mental Training.

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