Chapter 1

General introduction
Although there are sceptics (e.g. Coalter, 2015), there is a widespread belief that doing sports is conducive for a person’s health (World Health Organisation, 2010). A large number of empirical studies have indeed shown the beneficial health effects of performing sports activities (Biddle & Asare, 2011; Janssen & LeBlanc, 2010; Poitras et al., 2016). However, the relationship between sports participation and health has not yet been comprehensively investigated. There is a need for further development of more specific knowledge, for instance by taking into account three aspects of health distinguished by the World Health Organization (WHOQOL Group, 1998): physical health, psycho-social health and health-related quality of life.

**Physical health** can be defined as a person’s ability “to mount a protective response, to reduce the potential for harm, and restore an (adapted) equilibrium” when “confronted with physiological stress” (Huber et al., 2011, p. 236). **Psychosocial health** can be described as the absence or lower levels of internalizing problems (i.e., emotional problems and peer problems) and externalizing problems (i.e., conduct disorders and hyperactivity-inattention), and as the presence or higher levels of appropriate social behaviour (Clarke, 2006; Goodman, Lamping, & Ploubidis, 2010; Hinkley et al., 2014). **Quality of life** in general can be defined as someone’s enjoyment and satisfaction assessed by the individual himself or herself by reflecting on physical, emotional, mental, social, and behavioural components of his or her functioning (Joefiak, Larsson, Wichstrøm, Wallander, & Mattejat, 2010; Ravens-Sieberer et al., 2014; Varni, Burwinkle, & Seid, 2006; WHOQOL Group, 1999). The more specific concept of **health-related quality of life** refers to the individual’s personal evaluation of his or her enjoyment and satisfaction with respect to the three central components of health delineated by the World Health Organization (1948), namely the physical, psychological and social component of someone’s health (Varni, Burwinkle, Seid, & Skarr, 2003; WHOQOL Group, 1998; Williams, Wake, Hesketh, Maher, & Waters, 2005). Whereas physical health and psychosocial health relate to a person’s actual health situation, the concept of health-related quality of life pertains to his or her personal perception of this situation.

Based on the research gaps described in the next section, the present study focused on the relationship of sports participation with psychosocial health and health-related quality of life in children. In doing so, several characteristics of a child’s sports participation commonly used in sports research were examined.

**Studies on sports participation and health**

With respect to **physical health**, many empirical studies confirm the positive relationship between sports participation and health. Unlike studies on the other two aspects of health, studies on physical health do not mainly focus on adolescents or adults (Hallal et al., 2012; Warburton, Nicol, & Bredin, 2006), but also pay considerable attention to children (Janssen & LeBlanc, 2010; Kriemler et al., 2011; Strong et al., 2005). Based
on these studies, being active in sports activities is often recommended for children, adolescents and adults as an effective remedy for diseases such as overweight, obesity, diabetes, cancer and cardiovascular disorders (Kemper, Ooijendijk, & Stiggelbout, 2000; Strong et al., 2005; Tremblay et al., 2011; World Health Organisation, 2010) and, with respect to children, as an impetus for active sporting behaviour and good health in adulthood (Kjønniksen, Anderssen, & Wold, 2009; Perkins, Jacobs, Barber, & Eccles, 2004; Smith, Gardner, Aggio, & Hamer, 2015).

Although the beneficial influence of sports participation in general for children, adolescents and adults has been demonstrated to a considerable extent, less is known about specific characteristics of sports participation that might be relevant. Most studies focus on the frequency, duration and/or intensity of sports participation (Ekelund et al., 2016; Warburton & Bredin, 2017). Only a limited number of studies in this field pay attention to other characteristics of sports participation, mostly focusing on the distinctions between individual and team sports (Marques & de Matos, 2014), indoor and outdoor sports (Gates et al., 2016; McCurdy, Winterbottom, Mehta, & Roberts, 2010), involvement in competition or not (Hulteen et al., 2017) and/or contact and non-contact sports (Tsushima, Geling, Arnold, & Oshiro, 2016; Veliz, Boyd, & McCabe, 2017).

As far as psychosocial health is concerned, there is, albeit to a lesser extent than is the case with physical health, empirical evidence that sports participation is conducive to this aspect of health as well (Bailey, Hillman, Arent, & Petitpas, 2013; Biddle & Asare, 2011; Eime, Young, Harvey, Charity, & Payne, 2013; Goodwin, 2003; Penedo & Dahn, 2005). Compared to non-athletes, persons who participate in sports activities show less psychosocial health problems (Coalter, 2007; Eime et al., 2013; Pereira, Geoffroy, & Power, 2014; Wagnsson, Augustsson, & Patriksson, 2013). However, studies on this topic focus mainly on adolescents or adults (e.g. Biddle & Asare, 2011; Pereira et al., 2014; Spruit, Assink, van Vugt, van der Put, & Stams, 2016; Vella, Swann, Allen, Schweickle, & Magee, 2017) and much less on children (e.g. Ahn & Fedewa, 2011; Biddle, Ciaccioni, Thomas, & Vergeer, 2018).

Most studies on the relationship with health focus on frequency of sports participation (Bowker, 2006; Schumacher Dimech & Seiler, 2011) or its individual versus team characteristic (Slutzky & Simpkins, 2009; Vella, Cliff, Magee, & Okely, 2015). Only a few studies pay attention to another attribute, such as performing indoor versus outdoor sports (Reed et al., 2013), involvement in competition or not (Capranica & Millard-Stafford, 2011) or performing contact versus non-contact sports (Endresen & Olweus, 2005; Vertonghen & Theeboom, 2010) and its relationship with psychosocial health.
Regarding *health-related quality of life*, several studies with adolescents or adults suggest that sports participation is beneficial to this aspect of health (Downward & Rasciute, 2011; Eime, Harvey, Brown, & Payne, 2010; Snyder et al., 2010). For children, a limited number of studies focus on this relationship, reporting beneficial outcomes of sports participation (Tsiros, Samaras, Coates, & Olds, 2017; Vella, Cliff, Magee, & Okely, 2014). Only few studies with children, adolescents or adults pay attention to the importance of specific characteristics of sports participation.

**Further development of knowledge**

It can be concluded that there are clear indications of a positive relationship between sports participation and health. Most empirical studies in this field pertain to *physical health*. Fewer studies are available on the relationship between sports participation and *psychosocial health* or *health-related quality of life*. This research gap offers a challenge for further development of knowledge.

Another gap in current scientific knowledge is that the relationship of sports participation with *psychosocial health* or *health-related quality of life* has been investigated primarily in adults and adolescents. This relationship has been studied in *children* to a relatively limited extent.

A final research gap is that studies on the relationship between sports participation and psychosocial health or health-related quality of life mostly do not pay attention to several characteristics of sports participation simultaneously. These studies often focus on just one characteristic, for instance on frequency of sports participation or its individual versus team sports characteristic.

**Research question, central concepts and instruments**

The above-mentioned ‘knowledge gaps’ stimulated the start of a large-scale study with the following research question:

> Are characteristics of sports participation associated with psychosocial health and health-related quality of life in children?

*Children*

The study was performed among Dutch primary schoolchildren in the fourth and fifth grade. The *research population* comprised of about 375,000 children aged 10 to 12 years across approximately 6,700 primary schools in the Netherlands (National Dutch Central Organization of Statistics, 2016). Circa 2,300 children of this population have been studied and were involved in the cross-sectional analyses. About 500 children were also involved in the longitudinal analyses. Because the group of primary school children to be studied was expected to be fairly homogeneous in terms of psychosocial
health and health-related quality of life, a large group of children was needed to be able to statistically determine the relationship of sports participation with these two aspects of health.

Unlike some other studies (Gapin, Labban, & Etnier, 2011; Sullivan & Masters Glidden, 2014), the present study did not focus on ill or physically and/or mentally retarded children in a clinical setting but on primary school children. Within the group of primary school children, the present study focused on children in the prepuberal phase. At this age, a child may benefit from sports participation in psychosocial terms (Fraser-Thomas, Côté, & Deakin, 2005; Gould & Carson, 2008) and a breeding ground is laid for his or her later emotional and physical development (Catalano, Berglund, Ryan, Lonczak, & Hawkins, 2004; Damon, 2004). Furthermore, children of 10 to 12 years of age are able to complete questionnaires about sports participation, psychosocial health and health-related quality of life without help.

**Sports participation**

With respect to the concept of *sports participation*, a distinction can be made between participation in school sports activities (Harrison & Narayan, 2003), extracurricular school sports activities (Schumacher Dimech & Seiler, 2011), and sports club activities, i.e., activities that are facilitated and organised by specific sports clubs that in most cases are homogeneous with regard to the offered sports and heterogeneous with regard to the age and skills of the participants (Bowker, 2006; Slutzky & Simpkins, 2009). The present research focused on children’s participation in sports club activities, which is the dominant form of children’s sports participation in the Netherlands (Collard & Pulles, 2015).

Regarding *characteristics of sports participation*, there is, as stated above, only a limited number of studies reporting on associations with psychosocial health or health-related quality of life in children. The few relevant studies focused alternately on mainly one of the following characteristics of sports participation: frequency or duration of sports participation (McKercher, Schmidt, Sanderson, Dwyer, & Venn, 2012; Slutzky & Simpkins, 2009), performing individual versus team sports (Slutzky & Simpkins, 2009; Vella et al., 2015), involvement in competition or not (Breistøl, Clench-Aas, Van Roy, & Raanaas, 2017; Capranica & Millard-Stafford, 2011), performing indoor versus outdoor sports (Reed et al., 2013; Thompson Coon et al., 2011) or performing contact versus non-contact sports (Endresen & Olweus, 2005; Vertonghen & Theeboom, 2010). In the present study, all of these characteristics of sports participation were taken into account.

A child’s sports participation was assessed by a number of questions from the self-report version of the Movement and Sports Monitor Questionnaire – Youth Aged 8–12 Years (MSMQ) (Ooijendijk, Wendel-Vos, & De Vries, 2007). These questions relate
to, amongst others, membership of a sports club and frequency of sports participation. A question concerning the sport(s) in which the child participated was added. The validation of the questions about sports participation is described in Chapter 2 of this thesis.

Psychosocial health
In the first section of this introductory chapter, a definition of *psychosocial health* is given. This definition is congruent with the operationalization of psychosocial health utilised in the Strengths and Difficulties Questionnaire (SDQ), a validated and reliable screening instrument concerning the psychosocial health of children and adolescents (Goodman, 1997, 2001; Muris, Meesters, & Van den Berg, 2003).

Apart from its clinical application, the SDQ has evolved into a screening method in research settings (Borg, Salmelin, Kaukonen, Joukamaa, & Tamminen, 2014; Rothenberger et al., 2008). The inclusion of both strengths and difficulties concerning a child’s psychosocial health in the SDQ makes the questionnaire suitable for studies in children in a non-clinical setting (Van Roy, Veenstra, & Clench-Aas, 2008). Due to its brevity and simplicity, the SDQ has become one of the most widely used screening instruments regarding children’s psychosocial health (Vostanis, 2006; Youth in Mind, 2012).

Health-related quality of life
The last important concept in the central research question is *health-related quality of life* (HRQoL), which has also already been defined above. In the present study, a child’s health-related quality of life was determined using the self-report version of the KIDSCREEN-52, a validated and reliable questionnaire. This questionnaire distinguishes a physical, a psychological and a social domain, which together comprise ten dimensions of health-related quality of life (The KIDSCREEN-group Europe, 2006).

The KIDSCREEN-52 questionnaire is an instrument developed and normalized for examining health-related quality of life in children and adolescents in the age of 8 to 18 years. This instrument was developed simultaneously in 13 European countries, including the Netherlands, with special attention to childhood concepts of health and well-being. The KIDSCREEN-52 questionnaire can be used within a clinical and research context and is easy to use and score (The KIDSCREEN-group Europe, 2006).

Data collection and approval
Data collection took place between November 2011 and June 2014. The local medical ethical committee, METc VU University Medical Center, approved the study. All parents or guardians of children included in the study provided a written informed consent.
Reading guide
Chapters 2 through 4 of this thesis present research findings on associations between different characteristics of sports participation and various aspects of psychosocial health in Dutch fourth and fifth-grade primary school children. Whereas the first two chapters focus on cross-sectional associations, Chapter 4 deals with longitudinal associations.

In Chapters 5 and 6, a perspective shift takes place from psychosocial health to health-related quality of life. In these chapters, successively cross-sectional and longitudinal associations between the different characteristics of sports participation and various dimensions of health-related quality of life are discussed.

In Chapter 7, the central research question is answered, based on the results that were discussed in the previous chapters. Subsequently, some additional analyses on the relationship between sports participation and health-related quality of life are performed in which psychosocial health is treated as a potential mediator and/or moderator. The chapter ends with a reflection on the practical implications of the findings at hand and suggestions for future research.
REFERENCES


---

General introduction


