UNDERSTANDING PHYSICAL ACTIVITY IN ADOLECENTS WITH CEREBRAL PALSY FROM A SELF-DETERMINATION THEORETICAL PERSPECTIVE: A MIXED METHOD CASE STUDY

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ABSTRACT

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The amount of research in cerebral palsy has augmented considerably during last twenty years. Increasing functional capacity in population with cerebral palsy, through physical activity has been the main goal of the research in this field during the past decades. Research sustains its effort in a basic assumption, that an increase in functionality will be followed by an increase in physical activity behavior, consequently health benefits are expected. Unfortunately, positive results are limited to the environment of the intervention and therefore not sustained in time. Recent research has started to explore alternatives to foster sustained physical activity behavior after intervention. It has become one of the main current challenges in the field of cerebral palsy, a challenge that it is still unanswered. Based on self-determination theory (Deci & Ryan, 2000), the aim of the present research was to describe and understand the elements involved in initiating and maintaining a physical activity behavior among three Finnish adolescents with cerebral palsy. This is an abductive (both theory and data driven) mixed method case study. Data was collected during a three-month intervention study (EXECP study) which aimed at increasing functional capacity and physical activity levels among the participants. Participants filled quantitative questionnaires assessing: motivational regulation; perceived competence, autonomy support and social support; physical activity; intentions and perceived limitations to be physically active. In addition, indirect and direct qualitative observation and interviews, were used. Quantitative data was analysed via descriptive analysis using IBM SPSS statistics software, while qualitative data was analysed through narrative and descriptive analyses. According to the results, intrinsic forms of motivation towards physical activity and support of the satisfaction of the psychological basic needs, and high PA were found among two participants. External forms of motivation towards physical activity and lack of support of the satisfaction of the psychological basic needs, and low PA were found in one of the participants. Additionally, the results suggest that perceived internal and external barriers towards physical activity, and intentions towards PA, can be related with the level of physical behavior among participants. These results are in line with the tenets of the Self-Determination Theory. Additionally, the results help in understanding physical activity among persons´ with CP and help in planning and implementing fitness and physical activity interventions targeting adolescents with cerebral palsy. Further research is needed in the field to study if the results are transferable to other participants.

Keywords: cerebral palsy, self-determination theory, autonomy support, basic needs, motivation, intention, barriers, physical activity.

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1 INTRODUCTION

Cerebral Palsy (CP) is an umbrella term referring to a group of impairments characterized by the affection of posture and movement (Rosenbaum, 2003). It is considered a non-progressive disorder even though its physical representation tends to progress in the severity of the physio-psychological limitations. The origin of CP is a lesion or anomaly of the brain occurred during early stages of the individual´s development (Mutch, Alberman, Hagberg, Kodama, & Perat, 1992). The expression of CP varies largely from person to person, and it could be said that there is no case of CP exactly the same.

The physical impairments of cerebral palsy are the most visible, but not the only ones. Together with the physical conditions, cerebral palsy is often accompanied by secondary disorders, such as sensory, epileptic, learning, or behavioural issues (Szatmari, Offord, & Boyle, 1989). Historically, research on this field focused on the effects of interventions on the physical aspects of cerebral palsy, the so-called functionality (Dodd, Taylor, & Damiano, 2002). Functionality is understood as those domains related to acquiring or developing motor skills (Ketelaar, Vermeer, Harm't Hart, Petegem-van Beek & Helders, 2001).

During last couple of decades, a large number of interventions have demonstrated their effectiveness in improving functionality (Van den Berg-Emons, Van Baak, Speth & Saris, 1998; Verschuren et. al., 2007; Fowler et.al., 2007). Nevertheless, these interventions share a sadly common characteristic; the beneficial effects are time-bound (Verschuren et. al., 2014; Scianni, Butler, Ada & Teixeira-Salmela, 2009; Verschuren et. al., 2011; Dodd, Taylor & Damiano, 2002). Population with cerebral palsy is favoured by physical interventions, but once the intervention is concluded, the physical behavior (causing the increase of functionality) is not sustained, and the benefits disappear.

Based on Self-Determination theory (Deci & Ryan, 2000), this study explores and describes the elements influencing the levels of self-reported physical activity among three adolescents with cerebral palsy. The current study does not pretend to promote

physical activity behaviors, but to understand the main constructs affecting the physical activity levels of the participants. For a better understanding of the phenomenon, the research was planned as a multi-case study with mixed methods design. Quantitative and qualitative data are equally important in the present study. Quantitative data was analysed via descriptive analysis using IBM SPSS statistics software; while qualitative data was analysed through narrative and descriptive analyses.

Self-determination theory (SDT) (Deci & Ryan, 1985) is the theoretical framework in this study. In past decades, it has been a useful and common tool in analysing and providing a better understanding of the relationship between motivation and physical activity. Furthermore, SDT has been used to explore and understand the active behaviour in presence of disabilities (Saebu, Sorensen & Halvari, 2013; Chtzisarantis & Hagger, 2009; Gourlan, Sarrazin & Trouilloud, 2013). These antecedents inspired the aim of this current study.

To fill the void in research, the purpose of this study is to describe and understand physical activity and motivation of adolescent males with cerebral palsy.

1.2 SELF-DETERMINATION THEORY

Aristoteles described the natural aspiration of the human being towards psychological growth and integration. According to Aristoteles, it is inherent to our nature to seek new challenges, to grow from the inside, the soul. This philosophical perspective links the personal growth with the achievement of a state of wholeness. In such state, the individual lives in harmony with the self, and the environment.

Freud (1927) and Mr. Ford (1992) continued with Aristoteles´ thoughts legacy. Either when talking about the ego, or more recently when describing the human being´s tendency to integrate new experiences into the self. They are indeed considered to be one of the greatest philosophers of science of the last century. They assumed that there is an inner “energy” inherent to the human condition that provokes us to seek new challenges to gain integrity, developing the human potential. The aim of this seeking

process will be to reach the true self. The true self is understood as the self that interacts with the environment while feeling full (state of wholeness).

There is, however, another school of thought that argues by considering, that no such tendency is inherent to the human nature (Skinner, 1953; Bandura, 1989). This second approach focuses on the unique role that the environment plays, as a guidance of the individuals´ behavior (Chein, 1954; Karvonen & Rimpela, 1996).

During decades, both ideas were confronted. Instead of positioning towards either one (humanistic, psychoanalytic, and developmental theories), or another (behavioural, cognitive, and post-modern theories) SDT (Deci & Ryan, 1985) postulated its ideas on integrating the two approaches into a new theory. One theory complements the other for a better understanding of the individual nature and its behavior.

According to SDT, humans have an inner tendency towards active engagement and growth through the experience (Ryan & Deci, 2000). At the same time, SDT emphasizes that environmental factors play an important role in modulating human behaviors (Deci & Ryan, 1985). The individual, per se, will naturally tend to explore, to learn, to experience the surrounding following an inner desire to grow as a person, to feel functional within the environment, to achieve the abstract concept of the well-being (Ryan & Deci, 2000). Those strong inner intentions are moderated by the environment, which can either facilitate or thwart the individual´s tendency (Deci & Ryan, 2002). The balance in the equation between the individual´s desires and the environment conditions will determine the extent in which the individual perceives his or her well-being.

For a better understanding of the SDT, this study proposes the following metaphor. Let´s think about the human as the river that tends to create a shape through the mountains, based on the strength of its current. It could seem that the river´s shape is sometimes capricious, shaping like a snake. As the individual, the river can be moulded by the social environment. A community based next to the river, could try to modify the river´s course for a better convenience. Something similar can occur with an individual, its natural tendency can be moulded by his or her environment. Precisely this idea is the foundation of the SDT. Going back to our example, the social environment context can

be strong enough to absolutely modify the course of the river. In contrast, it could be speculated that a community concerned about the nature of the river, and its tendency to flow in a certain way, could decide to respect the natural course of the river. This basic example allows us to explain, how the social environment, according to the SDT can affect the course of the individual´s life, by either supporting or thwarting the inner natural tendency.

The social-contextual factors are called to determinate the individual´s self-growth (Ryan & Deci, 2000). It cannot be denied that the river will tend to keep its shape, fighting against the modulations done by the community. Using the river´s metaphor, we could say that the inner tendency of the individual will fight against the modulations of his or her environment, at least against those tending to thwart its natural tendency to grow based on his or her needs.

SDT suggests that, it is the individual´s inner energy, that is responsible of the individual´s behavior. The inner energy or tendency will moderate the individuals´ attitudes towards life´s experiences or behaviors. This inner energy can, either promote the individual´s tendency to engage or master an activity, or by contrast, the individual´s propensity to avoid new situations, or dropping out from an experience (Ryan & Deci, 2000).

To shape a river will require continuous resources, continuous actions to counter the strength of the river; by contrast those communities which respect the course of the river, and effectively use the strength of the river, will in return gain sources from the river. SDT proposed that the community should support the natural aspiration of the individual (Ryan & Deci, 2000). As a result, functional members in its community will contribute to the community´s prosperity.

The source of the individual´s inner tendency is, according to SDT, the satisfaction of some basic needs (Deci & Ryan, 2000). The individual will tend to achieve a state of well-being, based on the respect of his or her natural tendency to satisfy those basic needs (Ryan & Deci, 2000). At the same time, the community will moderate his or her achievement. It can be suggested, that a desirable goal for a community could be to

promote functional individuals. Consequently, the community will have to foster individuals´ needs satisfaction (Deci & Ryan, 2010).

SDT refers to three basic needs: the need for competence, the need for relatedness and the need for autonomy (Deci & Ryan, 2000, 2008). The basic needs must be understood from the individual´s perspective, so the needs are determined by the individual´s own perception, of competence, relatedness and autonomy, and not for external evaluation of those needs (Deci & Ryan, 2000). The definition of these basic needs will be critical to promote the best social environment to support the individuals´ innate tendencies (Ryan & Deci, 2000b). As mentioned, the promotion of the three basic needs´ fulfilment will correlate with the individuals´ achievement of a state of well-being, integration and social coherence (Ryan & Deci, 2000). In contrast, undermining the basic needs satisfaction will correlate with amotivation to engage or master an activity, enhancing a state of ill-being (Deci & Ryan, 2008).

The basic needs are for the individual like the basic minerals and nutrients for a plant, basic nutrients to develop and grow. In this example, the plant needs a constant exchange within the environment. Similar situation occurs with the individual and his or her environment, enhancing and preserving functionality (Jacob,1973; Deci & Ryan, 2008). According to SDT, the basic psychological needs are universal, innate to the human nature, and essential for the optimal human development (Deci & Ryan, 2000).

The seeking of the basic needs satisfaction will modulate the individual´s behavior (Deci & Ryan, 2000). The individual could mark goals, steps towards the fulfilment of the basic needs. Those intermediate states could be considered as necessary to reach a need, or compensatory states in case the basic need cannot be fulfilled (Ryan, Sheldon, Kasser, & Deci, 1996). The individual and its natural tendency will foster certain behaviors, to promote need´s satisfaction. Nevertheless, the individual could find situations where, he or she must sacrifice personal goals or dreams to reach a higher level of functionality within the community. When the source of the action is not the fulfilment of a basic need, but some other goals or motives, then the individual will not reach the state of well-being (Ryan & Deci, 2000, 2000b).

SDT offers a tool to promote environments that instead of thwarting the natural individual´s development will foster the self-development through the support of the individual´s needs satisfaction (Deci & Ryan, 2000). Through their promotion, the community will promote the individual´s well-being, consequently a better functional community.

1.3 COMPONENTS OF THE SELF-DETERMINATION THEORY

The SDT explains the different phenomena in the individual´s behavior by a number of different theories in which SDT is the sum of all of them. The different components, or sub-theories share some common aspects. All of them assume the premise that the individuals have a natural, an inner tendency to grow through the life´s experiences (Deci & Ryan, 2000). Life´s experiences are determined by the environment by either thwarting or facilitating their three basic psychological needs satisfaction (Deci & Ryan, 2000). We will now explain briefly the components of the SDT:

1.3.1 Cognitive evaluation theory (CET) (Deci & Ryan, 1980)

Social contextual environment plays an important role on the individuals´ perception, particularly the perception related to the basic need satisfaction. CET included a new terminology to conceptualize different types of environment: supportive, controlling and amotivating environments (Deci & Ryan, 2002). The different types of environment refer to the level in which they support needs satisfaction, ordered from greater to lesser support. This is not a trivial issue, the environment will influence the individual´s motivation to behave, modulating whether the individual initiates or maintains a behavior.

This fundamental idea is the core of CET, suggesting that when the individual´s behavior is based on his or her own choice to perform, with no external interference, then the behavior will start and will be sustained freely because of the feeling of enjoyment (Deci & Ryan, 1980). Intrinsic motivated behavior correlates with initiating and maintaining the action (Ryan & Deci, 2000b).

On the other side, CET talks about extrinsic motivation to describe the antagonist feeling (Decharms, 2013). In this case, the individual will feel that the source of his or her action is an external force (the environment). The Individual does not pursuit the satisfaction of his or her own basic needs. Oppositely, the individual is required to behave by the social context. This idea is the basis for the so called, locus of causality (Goudas, Biddle & Fox, 1994).

As mentioned, the individual can perceive that his/her actions are guided either by his/her own self, or by external sources, referring to either intrinsic or extrinsic motivation, respectively (Ryan & Deci, 2000b). When an individual perceives the causality of his or her actions external to the self, the intrinsic motivation is negatively affected (Lepper, Greene & Nisbett, 1973), together with the feeling of enjoyment (Eisenberger & Cameron, 1996). This study takes the last asseveration with caution, since some external forms of verbal feedback have shown to have a positive effect on the individual´s intrinsic motivation (Deci, Koestner, & Ryan, 2001).

CET focuses its attention on the effect of the context when either facilitating or thwarting, the needs of autonomy and competence in the individual´s intrinsic motivation (Deci & Ryan, 1980). Thus, if the individual perceives the causality of his or her actions as internal, the intrinsic motivation will be enhanced. In contrast, if the individual perceives that the origin of his/her actions as external (external locus), the intrinsic motivation will be negatively affected. Related to the need of competence; when the individual perceives that a certain behavior or action enhances his/her own perceived competence, the intrinsic motivation will be facilitated. Opposite if the individual perceives that certain action undermines his/her perceived competence then the intrinsic motivation would be negatively affected.

The terms controlling, and informational context was briefly presented above (Deci & Ryan, 1985). The present study would like to stress now that, according to the CET, in presence of a controlling social context, the individual perceives that he or she is guided by the context to reach certain goals established externally to the self. Consequently, the intrinsic motivation will be undermined (Deci, Koestner, & Ryan, 2001).

Furthermore, the individual´s perception could shift, if he or she perceives that the controlling environment offers some alternatives. In this case, the individual perceives that in some extend the behavior is guided by his or her wish, correlating with a positive effect on intrinsic motivation (Zuckerman, Porac, Lathin, & Deci, 1978). Informational context fosters individual´s inner intention to explore, to learn by the experiences. An example of informational context could be a supportive feedback; consequently, intrinsic motivation is enhanced (Koestner, Ryan, Bernieri & Holt, 1984).

But not just the social contextual environment mediates on the individual´s motivation to act. CET talks about the so-called interpersonal climate, which plays an important role on individual´s motivation (Ryan, Mims & Koestner, 1983). Accordingly, individual´s characteristics will determine whether the individual perceives the social context as either promoting the inner form of motivation, or as an external agent forcing a behavior. The same social context, for the same behavior at the same period can be perceived differently for two individuals, depending on their interpersonal climate (Ryan, Mims & Koestner, 1983).

The social context together with the individual´s interpersonal climate, will determine the level of individual´s enjoyment (Deci & Ryan, 2002). It cannot be assumed that a competitive climate is a controlling environment, since for some individuals, it can be perceived as either informational or controlling, depending on his or her own personal climate (Reeve & Deci, 1996).

CET proposed another element to take into consideration which affects motivation. The ego versus task involvement (Ryan, Koestner, & Deci, 1991). The stress is now on whether the individual behave aiming to show to others (he can do an activity, even better than them (ego-involved)), or whether, the individual participates in an activity to have a new experience (task-involved) (Jagacinski & Nicholls, 1987). CET suggested that ego-involved actions will be perceived as controlling context, while task-involved activity will lead to the individual perceiving the context as informational (Plant & Ryan, 1985), with the subsequent effect on the intrinsic motivation (Rawsthome & Elliot, 1999).

1.3.2 Organismic Integration Theory (OIT) (Deci & Ryan, 2002; Deci & Ryan, 1985)

The concepts internalization and integration are one of the greatest contributions of the OIT to the SDT. Individuals´ motivation is understood not as a static but as a dynamic process (Deci & Ryan, 2002). Through experience individuals can switch from intrinsic to extrinsic forms of motivation and vice versa.

According to OIT, individuals tend to integrate values and social regulations into the self, while performing or experiencing a behavior (Deci & Ryan, 2002). Through this process, individuals that initially started an activity due to an external force, could switch the perception of such external origin of action. The different perception towards a more autonomous source of action, will correlate with a higher perception of enjoyment (Deci & Ryan, 1985). It has been suggested that this switching from extrinsic to intrinsic motivation is a process, with different phases or stages (Deci & Ryan, 2002).

As it has been mentioned, individuals tend to integrate their ongoing experience into the self, “you learn from mistakes” “what does not kill you makes you stronger”. By adding new experiences, the individual learns how to interact with the environment in a more efficient way (Ryan & Deci, 2000). It has been suggested that past experiences are called to play an important role on the perception of social regulations (Deci & Ryan, 2002). The individual is an organic active actor, in which, his or her nature enhances the process through which external forces of actions tends to mute and be part of the self or self-causality (Schafer, 1968; Deci, Eghrari, Patrick, & Leone, 1994). It is a dynamic and progressive process, in which the increase of practice of an experience will correlate positively with a higher level of integration into the self.

To illustrate the process, an example is proposed by visualizing a rope where in one of the edges is found those behaviors which have, as a source of action, a self-determined behavior (intrinsic motivation). At the other edge of this imaginary rope lies a group of behaviors performed by the individual due to external agents, for example authority. In this case, the individual does not have an intention to perform the activity. Nevertheless, if the individual is forced to perform the activity, he or she could even choose to perform the activity passively. The theory referred to this phenomenon with the term

“amotivation”, absence of motivation to perform a behavior. In presence of amotivation, the individual will perceive him or herself unable to reach the desirable outcomes, due to a lack of contingency (Rotter, 1966), competence (Bandura, 1977) or the outcome will not offer any additional value (Ryan, 1995). However, the behavior will be performed, even though we could presume that the results will not be optimal.

Between both extremes of our imaginary rope there are different levels in which we could grasp the rope. OIT talks about four types of extrinsic determined behaviours (Deci & Ryan, 2002). Behaviours where the source of action is regulated not by autonomous reasons, but external regulations. By visualizing the rope, it is easy to figure out that some of the behaviors, even though they share an external source of action, will be located closer to the intrinsic form of regulation. This is particularly important, since OIT suggests that, it is easier to internalize or integrate external regulation when they are closer to the self-determined behaviors (Deci & Ryan, 2002). The four types of extrinsic determined behaviours are:

External regulation. The individual performs a behaviour due to some external contingency, for example an authority. In this case, his or her performance is triggered by fear of punishment “rules are the rules” (Ryan & Connell, 1989), or by an expected reward (Skinner, 1963). The individual´s intrinsic motivation will be negatively affected, since it is not a self-determined behavior (deCharms, 1968). An external source of action increases the probabilities of action´s cessation (Deci & Ryan, 1985).

Introjected regulation. The source of the behavior is somewhat internal. The individual tries to avoid social isolation, a feeling of guilt. Peer´s approval of the behavior refers to esteem based pressure (Ryan & Connell, 1989). The individual integrates, at least partially, the regulation into the self (Deci & Ryan, 1995), but still the regulation is external (Deci & Ryan, 2000); the source of action relates to perceived controlling environment; therefore the consequence will be a negative effect on the individual´s intrinsic motivation (Mitchell, 1996).

Regulation through identification. External regulations are incorporated into the self (Ryan & Connell, 1989). External rules mutate into a self-regulation, into internal rules:

“I would do it even though I don´t have to do it”. Another example could be those individuals enrolling voluntary in military service in those countries where the service is no longer a duty. The individual perceives a level of autonomy (he or she can decide if enrol or not), he or she values and accepts the behavior, through a process of internalization of the external regulation into the self, and finally he or she enrols voluntary into the military service. The behaviour becomes part of the self, although the source of the action was originally external to the self (Deci & Ryan, 2000).

Integrated regulation. A thin line separates integrated regulation and intrinsic regulation. While in the intrinsic regulation the individual engages in an activity because of his or her own satisfaction, enjoyment, self-interest; in integrated regulation the individual will fully integrate the values and behavior as a part of the self, but not because of the satisfaction and interest, but because of an interest to attain personal important goals (Deci & Ryan, 2010). The external source will induce a behavior, that is congruent with the individual´s own believes and goals, so the individual integrates the external regulation into the self (Deci & Ryan, 2010). It has been defined as “self-determined extrinsic motivation” (Deci & Ryan, 2000).

The process is bidirectional. The internalization or integration can start at once, together with the experience (Ryan & Connell, 1989). It has been suggested that the basic need of relatedness could play an important role in promoting internalization (Ryan, Stiller & Lynch, 1994). Nevertheless, its role is limited since the fulfilment of relatedness is not enough to internalize an external regulation (Deci & Ryan, 2002). The individual will require a sense of autonomy and competence to fully internalize a value, and not only having the approval of the community (relatedness) (Deci & Ryan, 2010).

Internalization is not determined by the presence or absence of perceived autonomy. Nevertheless, the individual´s perceived autonomy support mediates the level of internalization of an external regulation (Deci & Ryan, 2002). As it was exposed, if the individual perceived some level of autonomy (understood as feeling of choice, volition and freedom) he or she will be more prone to internalize the experience into the self, no matter what the source of the behaviour is (internal or external) (Grolnick & Ryan, 1989).

1.3.3 Causality Orientations Theory (COT) (Deci & Ryan, 1985)

COT focuses on the individual´s personality characteristics. This sub-theory suggests that there are three different kinds of personalities, which are stable among the community (Deci & Ryan, 1985). Therefore, it would be possible to divide the community into groups of individuals with similar personality, according to the degree of self-determination found in their behavior. Based on the last assertion, a tool was developed based on COT, the General Causality Orientations Scale (GCOS) (Deci & Ryan, 1985). The analyses of the three personalities will lead with a score, which allows to predict the individual´s behavior based on his or her personality (Koestner, Bernieri, & Zuckerman, 1992). The three different personalities are now briefly presented:

a. The autonomy orientation (Deci & Ryan, 1985). Individuals with this kind of personality performs based on self-determination, looking for satisfaction and achievement of his or her basic needs. At the same time, in presence of external causality, the individual will tend to integrate the behavior into the self.
b. Controlled orientation (Deci & Ryan, 1985). In this case, the individual tends to behave under a controlling context. I could be suggested that this kind of personalities feel comfortable with a high level of control over their behaviors. It relates to external or introjected regulation, inhibiting integration of the behavior into the self.
c. Impersonal orientation (Deci & Ryan, 1985). The individual tends to be passive or inactive, being part of a behavior only in presence of an external source of action. It relates to amotivation regulation.

1.3.4 Basic needs theory (Ryan & Deci, 2000)

SDT asserts that human beings are active in nature, meaning that they tend to grow by integrating life´s experiences into their self, while interacting within the environment (Ryan & Deci, 2000b). SDT assumes that individuals tend to act looking for a state of psychological well-being and personal growth (Ryan & Deci, 2000). A main construct of its understanding related to the individuals´ behaviors, is the idea of searching of the satisfaction of the basic psychological needs as a source of actions (Deci & Ryan, 2000). The basic needs are presented as the motivational content to the individual´s behaviors. SDT asserts that individuals´ actions are related to or mediated by their environment, by either promoting the individual´s needs satisfaction, or thwarting it (Deci & Ryan, 2000).

Therefore, the individual could enrol in an activity not to reach a basic need per se, but in an activity, that foster the fulfilment of the needs. The fulfilment of the three basic needs will relate to the enhancement of growth and well-being (Ryan & Deci, 2000). This is important since, opposite to the drive theories, the individual does not act to reverse an unbalance situation, or to counter a deficit. It could be proposed that, it is innate to the human nature to actively behave to fulfil the basic needs satisfaction.

Subjects satisfy their needs in a unique way (Deci & Ryan, 2000). That is the reason why different individuals can perceive the same activity in the same context as facilitating the satisfaction of their basic needs, or opposite, thwarting them. The search of need satisfaction is universal among individuals (Deci & Ryan, 2000). Everyone will look for a state of well-being, a natural and healthy development of the self. On the other hand, when the individual´s behavior is not based on motives related to need satisfaction, then the behavior will not be persistence (Deci & Ryan, 2000, 2010). In this case, the individual will not enjoy the activity, and will not reach a high level of functionality within himself and within the community (Deci & Ryan, 2000, 2008).

Based on SDT a brief definition of the three basic needs is presented:

Competence refers to the feeling of being one's self, feeling confidence with one's own qualities and abilities to interact in an effective way with the surrounding environment (Ryan & Deci, 2000; Harter & Pike, 1984). The individual will perceive that his or her ability to perform an activity adequate to the requirement of the activity, so the desirable outcomes can be achieved (Deci & Ryan, 2010). The individual will perceive as well, that through practice his or her ability can be improved; once a certain ability level is achieved the individual will progressively search for more challenging levels within the same activity. It is important to distinguish between the individual´s perception and the individual´s capability to perform an activity. As goes for all three psychological needs, competence in performing an activity refers to the individual´s perception. So, the evaluation of the performance will be intrinsic to the individual as opposed to extrinsic.

Relatedness refers to the individual´s feeling of being part of the community, belonging to the environment surrounding him or her (Leary & Cox, 2008; Bowlby,1979). This feeling of being part of the community, is directly connected with the idea of the perception by the individual of being accepted by others when being oneself.

Autonomy refers to the individual´s perception of being the source of her actions (Deci & Ryan 1985; Ryan & Connell, 1989). By feeling that the source of the behaviour is the individual himself or herself, the behaviour will become an expression of himself or herself, a way of interacting with the community in his or her own way, with a feeling of control over his or her actions.

The three basic needs for competence, relatedness and autonomy are the key for understanding the content of our goals, and the process through the goals are pursued. The relationship between goals and basic needs is extremely important, since the potence of goals is determined by the relation with the basic needs. Goals established to satisfy or pursue the three basic needs will relate with persistent behaviors, and with behaviors that connect the individual with a feeling of well-being. SDT concluded by suggesting that those goals or motives of actions, that are not connected with the basic needs pursuit will not link with a stated of well-being (Ryan & Deci, 2000).

A community should promote functionality and well-being among its individuals by fostering an environment where individuals could reach the fulfilment of the basic needs (Deci & Ryan, 2000). By contrast, the community thwarting the inner desires of achieving the basic needs´ satisfaction will be connected with individual´s non-functional state or ill-being and the development of need substitutes (Ryan & Deci, 2000).

As we said, individual´s interpersonal characteristics (Deci & Ryan, 1985) together with the environment characteristics (Ryan & Deci, 2000; Ryan & Connell, 1989) can potentially determine the level in which individuals perceive the needs satisfaction level (Deci & Ryan, 2000). The perceived level of needs´ satisfaction has been a topic of a large number of empirical studies based on SDT (Duda & Ntoumanis, 2005), and could play a potential role in the present study.

1.4 SELF-DETERMINATION THEORY AND CEREBRAL PALSY

During the last decades, the Theory of Self-Determination has become one of the most popular psychological theory implemented into practice. A large number of studies using SDT as a framework have been presented in the literature. From theory to practice obtaining valuable results (Gagne & Deci, 2005). The previous chapter briefly presented the main constructs of the SDT.

To the author´s knowledge, limited amount of literature, having SDT as a framework, has been used for a better understanding of physical behavior in population with cerebral palsy. At the same time, it is essential to stress that, SDT has been a relatively popular and effective tool among typically developed population, for the promotion of physical activity (Gagne & Deci, 2005). By promoting physical activity among typically developing (TD) population, SDT has contributed to reduce health care service costs, and to increase well-being among TD population (Ryan & Deci, 2000). This research aims to claim that such useful tool must be used targeting population with CP. The aim is to reduce the cost for the society, and to increase the well-being among people with CP. To our knowledge, only one article, a protocol published in 2017, used SDT within

a CP intervention (Reedman, Boyd, & Sakzewski, 2017). The lack of previous literature restricts considerably the present study.

Any increase in physical activity has been proved to enhance quality of life (Shikako-Thomas et. al., 2009) and health in children with physical disabilities (Simeonsson, Scarborough, & Hebbeler, 2006). Therefore, literature suggested that physical activity improves well-being by facilitating interpersonal and intrapersonal perceived competence (Block, Varnner, Keys, Rimmer & Skeels, 2010; Fredricks & Eccles, 2006) relatedness (Block, Varnner, Keys, Rimmer & Skeels, 2010) and perceive autonomy (Watts & Caldwell, 2008). In the light of these suggestions, it is possible for the present research to stablish some parallelism between physical activity, and the three basic needs proposed by SDT, at least generally speaking, children with physical disabilities. Such parallelism, to the present research knowledge, is not supported by evidence, in presence of CP, due to the lack of previous research. Notice that, even though the presented literature did not use SDT as a framework; their outcomes sustained SDT constrains, adding additional support to this research, and some of its assumptions.

Traditionally, interventions targeting population with cerebral palsy have focused on improving functionality. The goal of increasing functional levels has been pursued, in most cases, through the implementation of physical or exercise programs. Therefore, increasing the level of physical activity and its intensity, and reducing sedentarism among CP children has been a common approach in CP interventions during last 20 years (Van den Berg-Emons, Van Baak, Speth & Saris, 1998; Verschuren et. al., 2007; Van Wely et.al., 2010; Fowler et. al., 2007).

Two different approaches have been used to increase functionality in population with cerebral palsy. The first one, is a group of exercises included under the umbrella term of cardiorespiratory fitness exercises. This first group of exercises includes; running, walking, cycling, swimming or mat exercises. The results at functional level are positive but with some limitations as it will be displayed (Van den Berg-Emons, Van Baak, Speth & Saris, 1998; Verschuren et. al., 2007; Fowler et.al., 2007).

A second strategy largely used in CP interventions has been the strength training. Recently, interventions tend to mix both approaches aiming to improve the outcomes.

Thus, strength training together with cardiorespiratory fitness, has become the most popular method used in most of the CP interventions. Cardiorespiratory fitness and strength training has shown positive outcomes related to functionality (Dodd, Taylor & Damiano, 2002; Darrah, Fan, Chen, Nunweiler & Watkins, 1997). There is no doubt today that, both strategies, combined or separately applied, are beneficial for CP children and adolescents (Verschuren, Ketelaar, Takken, Helders & Gorter, 2008). Literature established an important general assumption by which, the increase at functional level, will relate with an increase of general physical activity level, together with an enhance of the perceived quality of life, among population with cerebral palsy.

It is undisputed that interventions to increase functionality among CP population have had positive results. Nevertheless, those positive outcomes are strongly linked to the controlled environment were the interventions are applied (Scholtes et. al., 2010; Dodd, Taylor & Graham, 2003). Long term effects have been shown to be systematically limited (Verschuren et. al., 2014; Scianni, Butler, Ada & Teixeira-Salmela, 2009; Verschuren et. al., 2011; Dodd, Taylor & Damiano, 2002). This is crucial, because due to this peculiarity, most of the interventions among CP population do not have health benefits. Health benefits are related to long term effects (Van den Berg-Emons, Van Baak, Speth & Saris, 1998; Verschuren et. al., 2007). Consequently, their results have been repeatedly questioned (Dodd, Taylor & Damiano, 2002). The unresolved question is, why interventions are able to obtain good results in controlling environment, but are not able to transfer those results to non-controlling environments.

Research showed that CP children participate in physical activities in a reduced number of hours per week, in limited variety of activities, and with lower intensity than their typically developing peers (Imms, Reilly, Carlin & Dodd, 2008; King, Petrenchik, Law & Hurley, 2009). The consequences relate directly with secondary health problems (Durstine, 2000) and premature mortality (Wilmot et. al., 2012). It is a health issue, not only a functional problem for CP population. This data reinforced the need of answering the “why” question.

This research proposed to explore the “why” of those limited physical activity levels in CP population. It could be speculated that physical activity is not meaningful for CP

population, and that could explain the low levels of PA, through lack of motivation. It is important for this research to understand the meaning of physical activity for children with cerebral palsy. The conceptualization of the term is an essential starting point. Physical activity and leisure activity are used in this work as synonymous referring the same active behavior. Leisure activities include body movement produced by skeletal muscles resulting in an energy expenditure (Naes & Stadheim, 2016).

When asked, children with disabilities referred to leisure activities as" fun". Children explain that it is so because, it is free for them to join those activities (Schulz & Watkins, 2007). It may be suggested that autonomy could play a role in their perception, when the behavior is self-determined. Consequently, based on the propositions of SDT, the "fun" component, as autonomous element, would necessarily play a role in initiating and maintaining the active behaviour.

Rather than just "fun", children with CP referred to active leisure activities as a challenge. Physical activity is a way of developing their potential by challenging their limits (Schulz & Watkins, 2007). In line with these suggestions, literature has highlighted the value of physical activity in improving perceived competence in adolescents with cerebral palsy (Verschuren, 2007). This is quite important because, previous research suggested that perceived competence plays a determinant role in participation levels in adolescents with cerebral palsy (Kang, 2012).

Finally, active leisure activities are perceived as a way of interacting within the community and peers (Schulz & Watkins, 2007; Caldwell, 2005; Passmore, 2003; Leversen, Danielsen, Wold & Samdal, 2012; Roberts, 2011), to improve social relationships, to learn social cues. It is consequently related to well-being and life satisfaction (Heath & Fentem, 1997). Summarizing the presented evidence; this study could suggest that physical activity, when free (perceived autonomy), when matching individuals´ skills and task requirements (perceived competence), and when adding a social component (relatedness) is enjoyable for children with disabilities. This research pretends to add some criticism to previous studies, by proposing an open question to the reader; are those elements of leisure activities included in research physical interventions?

This research, based on SDT, sees clear parallelism between the active leisure activities, and SDT´s constructs of motivation. Furthermore, this research suggested that active leisure activities contain the necessary elements to enhance basic need satisfaction. That would explain why in such environment a high level of engagement, maintenance and enjoyment is observed (Majnemer, 2008). Conversely, this research suggests that previous CP interventions lack the elements found in active leisure activities, which could explain the limited long-term outcomes.

Other factors must be taken into consideration for a better understanding of the limited results in CP population when promoting physical activity. An important element is the perceived barriers, and the perceived facilitators to be physically active. The perceived barriers are divided in this study in, personal or internal, and environmental or external barriers (Verschuren, Wiart, Hermans & Ketelaar, 2012). Internal barriers refer to those which are related to the participants´ self, while external barriers are related to the social-contextual environment.

Verschuren (2012) explored the perceived facilitators and barriers of children with CP related to physical activity, differentiating between personal and environmental factors (internal and external). It is interesting to note that barriers and facilitators seem to be perceived as the different side of the same coin. Therefore, children and adolescents with cerebral palsy perceived that their skills related to the task (competence); the social contextual environment (relatedness); and the perceived opportunities or choices to participate in physical activities (autonomy) were both barriers or facilitators. The perception varied depending on whether those factors (competence, relatedness and autonomy) were perceived as supporting or thwarting their aspirations (Verschuren, Wiart, Hermans & Ketelaar, 2012). For example, the social environment factor, in a physical activity context, could be perceived as supportive when having parents with a positive attitude towards physical activity, or thwarting by not being accepted by their peers (Verschuren, Wiart, Hermans & Ketelaar, 2012**;** Lawlor, Mihaylov, Welsh, Jarvis & Colver, 2006).

Previous studies on children with disabilities support Verschuren´s results. Children with disabilities (including not only youngsters with cerebral palsy but, many other kinds of disorders affecting physiological or psychological functionality), identified the social environment as the main barrier to participate in physical activities (Devine & Lashua, 2002; Bedini, 2000; Badia, Orgaz, Verdugo & Ullan, 2013; Dahan-Oliel, Shikako-Thomas & Majnemer, 2012). Furthermore, children and adolescents with disabilities mentioned segregation as a facilitator for promoting physical activity, perceived by them as a supportive environment. Activities based on segregating adolescents according to their level of disabilities are perceived as a positive element to promote integration or relatedness (Shikako-Thomas et. al., 2009; Shikako-Thomas & Majnemer, 2012), perceived autonomy and perceived competence (Dahan-Oliel, Shikako-Thomas & Majnemer, 2012; Lundberg, Taniguchi, McCormick & Tibbs, 2011).

In view of the foregoing, and based on a SDT framework, this study suggests that: an environment supporting the three basic needs (among children and adolescents with cerebral palsy) during physical interventions, could foster a permanent or long-term physical active behaviour. Furthermore, taking into consideration the reasons stated that promote participation in active leisure activities, and the mentioned barriers and facilitators for physical activities. Altogether, within a SDT framework, could offer a useful tool for the promotion of physical activities among adolescents with cerebral palsy. In line with previous research (Austin, 1998), the goal could be not to increase functionality per se, but to increase well-being and life satisfaction through physical activity.

Traditionally, as it was mentioned, interventions based their research on a basic assumption. Thus, the increase of functional capacity would correlate with an increase of participation in physical activities (Novak et. al., 2013). The increase of such activities will be maintained outside the controlling environment, enhancing health benefits (Lundberg, 1978; Parker, Carriere, Hebestreit & Bar-or, 1992; Verschuren & Takken, 2010). Unfortunately, as it was exposed results, are far from being conclusive, and the assumption is questionable. As a conclusion, it can be suggested that interventions had positive results at functional level, but limited on time.

The previous paragraphs support the need of a new approach, where psychological aspects, such as motivation should be taken into consideration. Recent literature showed that only about 6% of the recent research on cerebral palsy, take into consideration psychological variables to promote a permanent behavioural change towards physical activity (Novak et. al., 2013). Most of the recent research does not even include long-term health benefits as a goal (McBurney, Taylor, Dodd & Graham, 2003).

During the last three years this tendency tended to vary. Far from being generalized, it is promising to observe how some studies started to explore a new approach in CP interventions (Reedman, Boyd, & Sakzewski, 2017). Where, physical activity aims to be incorporated to the children´s life, seeking the promotion of persistent positive health effects (Slaman et. al., 2015; Nooijen, 2014). This new approach does not deny the outcomes of previous research, and its benefits (Reedman, Boyd, & Sakzewski, 2017). On the contrary, added together at the end, the identified barriers and facilitators (Timperio, Salmon & Ball, 2004) and the benefits of cardiorespiratory fitness and muscle strength (Wiart, Ray, Darrah & Magill-Evans, 2010; Johnson, 2002), seeking for a major goal, the long-term positive effects (a health benefit). This new approach tries to incorporate participants´ voice to decide, in to some extent, the physical activity performing during the research interventions. Interventions where interventions´ goals matched the participants´ interests (Slaman, 2015). This new perspective is the base and the inspiration of the present study. The results from this new approach are far from being conclusive. Research concluded that results are in line with those results from studies on the general population reporting the difficulties in promoting a behavioral change (Poobalan, Aucott, Clarke & Smith, 2012).

The use of SDT in promoting physical activity among typically developing children has had positive results (Saebu, Sorensen & Halvari, 2013; Chtzisarantis & Hagger, 2009; Gourlan, Sarrazin & Trouilloud, 2013). In 2012, a systematic review provided strong evidence for the use of SDT in understanding the active behaviours in presence or absence of disabilities (Teixeira, Carraca, Markland, Silva & Ryan, 2012). This study referred to the three basic needs as barriers or facilitators of a behavior. The satisfaction of the needs will be mediated by the environment. Therefore, the result will correlate with the perceived form of motivation experienced by the individual (Deci & Ryan,

2012); while the motivation will mediate the degree of commitment to the activity; concretely in health motivation is a predictor of behaviour maintenance (Saebu, Sorensen & Halvari, 2013).

As mentioned, to the author´s knowledge, only one study with CP started to explore using SDT as a framework. The goal was to increase physical activity among CP children through motivational interviewing (Reedman, Boyd, Elliott & Sakzewski, 2017). Unfortunately, no results are available. Only the protocol of the intervention was published.

The literature review showed a gap in the research body, related to physical intervention with long term health effects, in CP population. This study does not pretend to forget the past achievement, but to add them to a new approach. A new approach based on SDT. SDT has been proved to have positive results in TD population. The author of this research believes that similar positive results could be applied to CP population. The first step is to explore SDT constructs in CP population.

2 PURPOSE OF THE STUDY

The present multi-case study explores the tenets of Self-Determination theory in three adolescents with cerebral palsy. The research aims to describe and understand:

- The motivation towards physical activity and participation in physical activities among the study´s participants.
- The role of SDT among study´s participants.
- The possible perceived barriers in physical activity participation.
- Intentions and participation.

3 METHODS

3.1 Research Design

This study can be defined as a descriptive multi-case study (Baxter & Jack, 2008) with a mixed method design (Onwuegbuzie & Collins, 2007). The decision for addressing a mixed method design was based on the recommendations for the health research field (Brannen, 1992; Creswell & Clark, 2007). Additionally, mixed method has been suggested to incorporate scientific and contextual factors for a better understanding of the phenomenon (Berwick, 2005). Finally, to mention that mixed methods combine the strength of two, traditionally independent research methods, the qualitative and the quantitative (Onwuegbuzie&Turner,2007).

3.2 Participants

A total of three Finnish males, diagnosed with spastic cerebral palsy (Gross Motor Function Classification System, I, II and III (able to move independently, with or without assistive devices) considered mild motor dysfunction, between the age of 16 and 21 (median 21, range 16 to 21) were selected by convenience sampling. The three participants were students either at secondary level (2) or at university level (1). No cognitive impairments limited the present study. One of the participants was reported by the parents as having a slight cognitive retardation which did not represent an obstacle for the present study, since he was able to understand and follow instructions, and did not have any problem in communicating with the research group members. Reported physical activity levels were heterogenous among participants, varying in activities and periodicity. Two participants´ reported (prior EXECP-intervention) being considerably more active than the third one. Participants sports activities included recreational soccer, adapted ice-hockey and horse riding. There were no drop-outs during the study.

3.3 Background of the Researcher

An important element of the present study is the background of the researcher. As a physiotherapist the main researcher has basic knowledge of the impairment at physical level. Despite the general knowledge reached during the physiotherapy studies related to cerebral palsy. I did a three-month specialization course in cerebral palsy, focusing on a better understanding of the impairment, and its physical rehabilitation. Additionally, I worked as a volunteer with children with disabilities for three years (2012-2016), as a football coach. Some of the participants were children with cerebral palsy. This experience represented my first contact with cerebral palsy. Moreover, I have participated as a volunteer in different adapted physical activity with children and adolescents with cerebral palsy (2012-2016) such as sailing, canoeing, or adapted ice-hockey. I have extra-curriculum courses in adapted physical activities (5ECTS). Furthermore, I have four years of experience as a strength instructor for elderly. This is relevant for this study for the reason that the work with the participants consisted mainly in strength training. Finally, I have some knowledge in Finnish language, which has enabled me to communicate with participants win Finnish when necessary. Recently I received 6 ECTS from a course Suomi-3 (intermediate level: able to communicate with some minor mistakes). The Master´s studies on sport and exercise psychology in JYU conferred on me, an additional perspective from the psychological aspects of human nature. I have considered to have adequate and relevant background to develop, define and delimitate the problem statement, gather the data and interpret the results from this study.

3.4 Participant Selection

This study was included within a broader project, the EXECP research project. The author of the thesis contacted the research group leader Professor Juutinen T. and the PhD student Pedro F. Valadao at the University of Jyväskylä (Nov. 2016). Participants from EXECP were selected as sampling of convenience for the present study. EXECP project is a major project exploring the effects of a 3-month tailored exercise therapy intervention at functional level among a group of CP adolescents. EXECP hypothesizes

that an increase of functional capacity will positively correlate with an increase of daily physical activity levels among participants.

Participants for the EXECP were recruited in Jyväskylä by public advertisements, at the Central Hospital District of Central Finland and Keski-Suomen CP-yhdistys ry. One of the researchers met the participants and participants´ guardians to collect the pertinent consent form, and to inform about all the details of the therapy exercise physical intervention. Participants were informed that the physical intervention would consist of a 12 weeks exercise program, with two or three supervised sessions of physical activity per week (physical activity sessions consisted in cardiorespiratory fitness and strength training). Additionally, participants and guardians were informed that every session would be developed in a laboratory setting, at the University of Jyväskylä.

3.5 Data collection

Data was gathered through quantitative and qualitative methodology. Quantitative data was collected previous to physical intervention, whereas the qualitative data was gathered during the intervention. Qualitative data involved research direct and indirect observations during the physical activity sessions. This direct contact between participants and the main researcher, included: feedback about performance; descriptive analysis of the exercises, and the reason to focus on such exercises; questions about their feeling within the intervention; questions about current and past level of physical activity and sport preferences; general goals in life, expectations, and the perceived weight of cerebral palsy related to those goals. Direct observation included informal interviews with parents (limited to two participants´ parents), and observation of the relationship between participants and relatives (only two participants´ parents). Indirect observations consisted on reported data gathered from different researchers by speech and observations of the participants. Regularly, an informal meeting among researchers was done to exchange relevant information for the present study.

Quantitative methods included a single questionnaire developed from two previous questionnaires (The Exercise Self-Regulation Questionnaire (SRQ-E) (Ryan & Connell,

1989) and a questionnaire used at the School-age Physical Activity study (SPA) (Tynjälä & Kokko 2017), to explore the variables of interest, referred in this study as Liitu Questionnaire. The resulting questionnaire was included as a part of the EXECP research project. The questionnaire was administrated by the researcher before starting the EXECP´s physical intervention, during the familiarization period (a month before the actual intervention started). Participants were asked to answer the questionnaire at home by themselves. They were instructed to contact the research members in case of doubts concerning the meaning of the questions. Researchers received no contact from the participants, nevertheless one of the participants (Gaspar) received the parent's assistance for a better understanding of the questions. Parents in this case exclusively translated the questions to an easier language, marking the answer provided by the participant. The variables of interest are presented in the following:

Forms of regulation*:* The Exercise Self-Regulation Questionnaire (SRQ-E) (Ryan & Connell, 1989) was developed to assess a range of internal and external forms of regulation. Internal forms of regulation are related with self-determined behaviors (intrinsic motivation), while external forms of motivation are related to less autonomous or more controlling behaviors. SRQ-E consists of 16 items divided in 4 subscales (4 types of motivation or reasons for exercising). Participants score on each subscale; external, introjected, identified, intrinsic regulation. Four questions per form of regulation were proposed, averaging the results, a score for each form was obtained. The stem "I try to exercise on a regular basis…" followed by 16 possible reason allowed the research to explore the reasons for exercising. Examples include: *I feel like I have no choice; others force me to exercise* (external regulation); *I feel like a failure if I don't exercise* (introjected regulation); *It is important for me to achieve goals related to sports* (identified regulation); *Because I enjoy exercising* (intrinsic regulation). Responses are provided using a 7-point Likert scale (range 1-7): 1 (not at all true) 4 (somewhat true) 7 (very true). Ryan and Connell (1989) tested the validity of the questionnaire for each category and found that alpha value ranged from .62 to .82 indicating moderate to high levels of internal consistency

SRQ-E questionnaire was translated from English to Finnish by the author of this thesis, reviewed and corrected by two different Finnish native speakers. The Finnish version was then translated back to English for a third Finnish native speaker. The author compared this English last version of the questionnaire, with the original questionnaire (in English language). Possible discrepancies were reviewed avoiding and preventing cultural discrepancies during the translation procedure. Procedure was done following the back-translation requirements.

A second instrument was added to the present study. Questions with minor adaptations were substracted from the Liitu Questionnaire/School-aged physical activity (SPA) study (Tynjälä & Kokko, 2017). The selected questions, together with SRQ-E questionnaire sustained the final questionnaire provided to the participants. The variables included through this tool were as follows:

Perceived Competence: Incorporated from Liitu Questionnaire (Tynjälä & Kokko, 2017) to assess own perceived abilities in performing a task. Two items were used to explore perceived competence in physical activities. The stems were: *Answer the next statements about yourself as accurately as possible. Choose one alternative that describes your perception the best.* These were followed by six sub-items. Example of the sub-items included: *I am good at sport, I am bad at sport.* Responses were based on a 5-point Likert scale, ranging from (1) to (5), where higher scores reflect greater perceived competence. Second stem was: N*ext you will think about what kind of person are you during school sports and free time exercise. Choose the number that fits you the best* followed by 10 sub-items, including: *I am fast, I am slow.* Responses were based on a 5-point Likert scale, ranging from (1) to (5), similar to the previous sub-item, higher scores reflect greater perceived competence. The study group testing the validity and reliability of this tool was contacted at the University of Jyväskylä (Nov. 2017), unfortunately the data is not yet available.

Participation: Self-reported physical activity levels has been used largely in previous literature. A single item "*How often do you exercise during your free time* was used to inquiry about participant´s physical activity levels during a week period. Participants

ranged their response from 1 (less than once a week or not at all, (2) once a week, (3) two or three days per week, (4) four or five days per week, to (5) six or seven days per week. Literature support the validity and reliability of the question (Vuori, Ojala, & Tynjälä, 2005*;* Bobakova et al., 2015) validation coefficient of 0,40 in clinical settings (Prochaska, Sallis & Long, 2001).

Intentions to be physically active: From Liitu questionnaire (Tynjälä & Kokko, 2017) research included three items to assessed intentions to become more physically active in different environments including: **Increasing physical activity levels during leisure time** introduced by the stem: *In the course of the next 6 months, will you increase the amount of free time exercise?,* followed by a 4-point Likert scale that spans from 1 (absolutely not), 2 (probably not), 3 (probably yes) and 4 (absolutely yes). **Increasing physical activity in school related settings** was assessed with the stem *In the course of the next 6 months, will you travel the trip to school on foot or by bike more often?,* followed by a 4-point Likert scale ranging from 1 (absolutely not), 2 (probably not), 3 (probably yes) and 4 (absolutely yes). Finally, **intentions in sport club settings** was assessed with a premise, that participants never before had participated on sport club activities. The stem was *if you have never played sport as a hobby, have you ever considered doing so in a sports organization/team/club?,* followed by a dichotomous scales (yes/no). A total index including the average of the two first items was used for the data analysis. Any of the three participants answered the third question.
The study group testing the validity and reliability of this tool, was contacted at the University of Jyväskylä (Nov. 2017), unfortunately the data is not yet available.

Limitations/Barriers: A single item was used to explore the participants´ perceived barriers and limitations constraining their will of being physically active. The measure differentiated between perceived internal and external barriers. The stem was *How much do the next factors prevent you from exercising/ playing sports?,* followed by 12 sub-items (6 measuring perceived internal barriers, and 6 measuring perceived external barriers), including the following examples: *It is too expensive* (external barrier) or *I think exercising is important, but I have no motivation* (internal barrier). Sub-items scored on a 5-point Likert scale ranging from 1 (does not restrict at all) to 5 (restrict

very much). A total index including the average of their responses was used for the data analysis. The study group testing the validity and reliability of this tool was contacted at the University of Jyväskylä (Nov. 2017), final reported data is not available.

Perceived autonomy support: A single item measured the perceived socio-contextual factors facilitating or thwarting the participants physical activity levels. Participants were asked to grade how relevant others support their physical activity behaviours. Participants named their relevant person. The stem *Based on the next claims, estimate your own perceptions of how teachers, other relatives or some other important person supports you. Now think about one important person:……..* was followed by 13-subitems, including: *gives encouraging feedback on exercising/training* or *motivates to exercise and play sports during free time.* Responses were then graded in a 5-point Likert scale, from 1 (completely disagree) to 5 (completely agree). A total index including the average of their responses was used for the data analysis. There is no available data about validity and reliability of the measure.

Social support: A single item was used to explore the perceived peer´s support related to physical activity participation. The stem *During a typical week: How often do your friends…*was followed by 4 sub-items, including *Exercise or play sports with you* or *ask you to exercise with them.* Participants graded their answer in a 5-point Likert scale, from 1 (never) to 5 (very often). A total index including the average was used for later analysis. Validity and reliability data are not available.

3.4 Data analysis

Different methodological challenges were found during the study process. Quantitative measures relied on the internal validity of the measures (Campbell, 1957; Campbell & Stanley, 1963; Onwuegbuzie & Daniel, 2002; Onwuegbuzie, 2000) whereas qualitative collected process relied on such criteria as credibility, transferability and dependability (Guba & Lincoln, 1989; Miles & Huberman, 1994; Maxwell, 2012; Mays & Pope, 2007). Quantitative and qualitative data was analysed parallel at the end of the intervention. The analysis was performed through a critical view of whether the data

from qualitative tools supported or not, quantitative findings (Sale & Brazil 2004; O'Cathain, Murphy, & Nicholl, 2007). The study considered quantitative methodology equally important versus qualitative methodology (Leech & Onwuegbuzie, 2009). Research collected qualitative data from direct and indirect speech and observation at the laboratory setting. Qualitative data aim to complement the results of the quantitative measures (Greene, Caracelli, & Graham, 1989) to capture the breadth of the multi-case study (Bryman, 2006) and to bring light for interpreting the findings. Finally, qualitative data added the participants perspective for a better interpretation of the quantitative data (Padgett, 2008).

3.5 Ethical issues

The ethical approval was awarded from the Central Finland Hospital District ethics committee. The processes in the present study (physical intervention and data gathered) included the following characteristics: respect to the privacy and confidentiality of the participants; it was a non-maleficence practice based on previous empirical research; data was stored in a secure location with restricted access; participants and guardians signed a consent form prior to the intervention; participants were informed that they could withdraw from the study at any point; issues related to rapport and friendship was taking into consideration within the research group; a relaxed environment was fostered within a solid base of professional research environment; inappropriate behavior was avoided (Miller, 2012).

Participants are coded under the fake names of Melchor, Gaspar and Baltasar. Data related to their physical activity preferences, experiences, goals or opinions are modified so they respect the core of their opinions, but it is not possible to recognize the subject. Similarly, the analysis of the results includes a modified description of the participants. Slight alterations can be found to preserve the privacy of the participants due to the limited number of subjects. Nevertheless, the research tried to preserve the essence of the data.

4 RESULTS

Forms of motivation

Melchor considered himself as an active adolescent. As a child with cerebral palsy one of his early duty in life was to visit periodically a physiotherapist to develop and preserve mobility. A physiotherapy session is considered per se a physical activity. Melchor can mobilize independently, even though he needs some sort of assistive device when walking. He liked the physiotherapy sessions, but he explained that, it was more fun when he played with his adapted basketball team. Melchor is a youngster who nonetheless displayed maturity beyond his years. He told the researcher that even though he loved playing floorball he decided to leave it behind, years ago, for the sake of his health. By then, he perceived floorball as a threat for his health condition, because of the risk of an injury and/or, because being a source for the development of secondary problems, such increasing spasticity. During the physical intervention, Melchor had a lot of questions, related mainly to the why, the reason why we did the exercise we did. He knew that according to previous research, his best physical performance was reached at his age, and after that a physical decline could be expected. He knew that physical activity is called to play an important role in countering the CP effects on his body, he showed a great interest and commitment during the intervention.

The qualitative results indicated that: Melchor presented low level of perceived external regulation (1,5) and introjected regulation (3,5), while he perceived strongly the autonomous forms of regulation. Forms of regulation range (1-7). Thus, identified regulation presented the higher value (7), completely supported by the qualitative data. Melchor understood that physical activity is fundamental for his health. Additionally, he tried to match the benefits of the physical rehabilitation activities with activities where he enjoyed. Additionally, he quit activities that he loved if they represented a threat for his health. Intrinsic regulation presented a high value as well (5). He said that physical activity was fun (referring to controlling or informative environments). Melchor repeatedly showed his love for exercising. Anecdotally, Melchor said that sometimes he

would prefer to be playing with the PlayStation at home, maybe becoming a professional e-player.

Melchor´s self-reported levels of physical activity were 1,8 (range 1-5).

Gaspar was the most interested in sports among participants. He played different sports, with different teams. Gaspar´s parents reported a slight cognitive problem at the beginning of the recruitment process. Nevertheless, no one of the research members had any difficulty in communicating or, generally talking training with him. Gaspar and his family mentioned his passion for exercising, nevertheless the researcher perceived during the physical intervention a lack of interest in performing some of the prescribed exercises. The researcher interpreted this lack of interest, or commitment to be related with the fatigue associated by literature to cerebral palsy (Jahnsen, Villien, Stanghelle & Holm, 2003). Opposite to Melchor, Gaspar did not have any question, about the exercises included in the different sessions. He was more interested in the social component of the training session, talking and laughing a lot with the research members. These qualitative findings support the quantitative findings showing that extrinsic (1,5) and introjected regulation (4,75) weighted considerable less than identified (7) and intrinsic forms of regulation (7). The results showed what it was perceived by the researchers, that Gaspar was involved due to his own will, and not because any external agent forcing him to participate.

Similar to Melchor, Gaspar´s qualitative and quantitative findings could suggest a high level of physical activity participation. Nevertheless, Gaspar had modest results in self-reported physical activity levels 2 (range 1-5).

Baltasar referred to be active when talking with one of the researchers at the beginning of the intervention. Nevertheless, during the intervention, he commented that physical activity was not in his daily life routine. Quantitative data confirmed this second approach. Baltasar did not participate in any sport club, or did not enrol at any regular physical activity. As many adolescent or young men of his age, was more interesting in his social life than in exercising. These findings support the quantitative data: external

3,25 and identified regulation 3,25, while introjected 3,5 and intrinsic 4 forms of regulation (range 1-5). Baltasar lives alone, he referred to enrol with no external pressure to the EXECP intervention. He was the oldest among participants. He was aware of the need of increasing physical activity levels, to prevent secondary health problems. Nevertheless, he commented to have some other priorities, such as those related to academic or social life.

Baltasar scored low levels in self-reported physical activity 1 (range 1-5).

Perceived Competence

The research considered Melchor as the most analytical participant. He was aware of his physical limitations. Melchor did not perceive major problems in his gross motor function. Nevertheless, he mentioned to the research members, that it required a massive concentration to activate specific muscles, such as the tibialis anterior, and therefore he experienced a challenge when walking. He perceived that it was possible to walk, but at the same time the effort to activate that muscle was enough to restrict in some extend his performance. These qualitative findings are considered to support the quantitative outcomes, Melchor reported a perceived competence of 3,03 (range 1-5), with a self-reported physical activity of 1,8 (range 1-5)

Gaspar did not express perceived difficulties in performing any of the exercises during most of the physical intervention exercises. Nevertheless, the external evaluation of his performance suggested that in most of the cases he could do the proposed exercises better, meaning with a higher intensity or commitment (the research associated it with motivational questions). The main researcher of this study, only once observed that he perceived the exercise as “too difficult”, the task requirements was in that case far from matching his skills. Otherwise, he always expressed that the tasks were too easy for him. These qualitative findings, support the quantitative results. Gaspar reported perceived competence 4,4 (range 1-5), with a self-reported physical activity of 2 (range 1-5)

An external evaluation of Baltasar´s functionality, would define him as a one with the best physical abilities among the participants. As it was mentioned, he did not participate in any adapted physical activity, and his social network did not include physical disable friends. Baltasar tended to compare his performance with non-disable population, more than with his own ability to perform activities. As an example, when having party with friends, he could perceive that cerebral palsy affected by limiting, the dance floor time, comparing with his non-disable friends. These findings support quantitative findings. Baltasar reported perceived competence 2,95 (range 1-5) with a self-reported physical activity of 1 (range 1-5)

Perceived social support

Melchor was a talkative, kind and extroverted participant. Smart and with a good sense of humour. He referred that he liked team sport activities, and pointed as his favourite activity the adapted basketball. The main researcher of this study, had the opportunity to visit one of his training sessions at the basketball pitch. It was observed how a group of adolescents with different kind of disabilities had a great fun, while doing a high intensity level physical activity (basketball). The atmosphere was full of laughs, it was not much about competing but about having fun. Unfortunately, the study did not have access to school, no data is available in such environment. Research could not compare controlling versus uncontrolling environments. Melchor reported perceived social support 2,75 (range 1-5), and a self-reported physical activity of 1,8 (range 1-5).

It was noticed during the intervention, that Gaspar always searched for social contact with the rest of the participants. Gaspar is extremely social, he likes to talk, making jokes all the time. The perception was that he enjoyed the most to be with the researchers, than exercising. His main social life (related to academic and leisure activities) was developed in segregated environment. Gaspar had the higher scores in perceived social support 3,75 (range 1-5), with a self-reported physical activity of 2 (range 1-5).

Baltasar mentioned a high social life, but according to him, the student social life does not necessary include physical activity. The qualitative data reflected low perceived

social support by the peers related to physical activity, confirming quantitative data. Baltasar´s scores were the lowest among participants, 2 (range 1-5), with a level of self-reported physical activity 1 (range 1-5).

Perceived barriers

Melchor and Gaspar shared the same perspective about perceived barriers. Both of them did not perceived their environment as a restricting their physical behavior. Concretely, Melchor mentioned that he was able to practice what he liked (which was contradictory since he resigned the floorball team). The qualitative findings, supported the quantitative measures, with the following scores: Melchor perceived (internal barriers) 1,66, (external barriers) 1,16 (M=1,41); while Gaspar perceived (internal barriers) 1, (external barriers) 1 (range 1-5).

Baltasar mentioned that no barriers were perceived from his perspective. Opposite to these findings, quantitative data pointed to a perception of internal and external barriers, at least higher than the rest of the participants. Concretely, Baltasar perceived (internal barriers) 2,5, (external barriers) 3,2 (M=2,85). Range (1-5). Additionally, Baltasar was the participant with lower level of physical activity among the participants.

Participants´ intentions to be physically active

Melchor expressed his satisfaction with the amount of activities he was currently participating., He did not express intentions of increasing the amount of activities, therefore he described his life as currently busy. All together with the increasing academic work load, make him to conclude that it could be difficult to increase the physical activity level. These results support partially the quantitative data, since Melchor´s data indicated: (Intentions to increase leisure physical activities) 3, (intentions to increase physical activity at school) 1, (intentions to increase physical activities in Sport clubs) 4 (M=2,66) (range 1-4)

Gaspar as we said, loved exercising. For him, it was the first time to be training in a gym. He expressed interest in joining a regular gym after the intervention. He was particularly interested in strength training. One of the researcher promised to go with

him, so he could explain everything, and maybe prepare a strength program for Gaspar. The qualitative finding supported the quantitative findings. Scores for quantitative findings are as follows: (Intentions to increase leisure physical activities) 3, (intentions to increase physical activity at school) 2; (intentions to increase physical activities in Sport clubs) 4 (M=3) (range 1-4)

Melchor and Gaspar talked positively about exercising, they both referred to sport with passion. The love for exercising was related to non-controlling environments for the both. They perceived school as a controlling environment, and any of them was interested in increasing the amount of physical activity developed in such environment. These qualitative findings supported the observed quantitative findings.

Baltasar did not express to the main researcher of this study, any intentions to increase his physical activity behaviour. He seemed more interested in social life, and academic performance, than in physical activity behaviours. These qualitative findings supported partially the quantitative outcomes. Baltasar according to the quantitative data, had intentions to increase (leisure physical activity)3, and intentions to increase (physical activity at school) 3, but no intentions to increase (physical activity in sport clubs) 1 (M=2,33) (range 1-4)

5 DISCUSSION

The main goal of this research was to describe and understand motivation towards physical activity, and self-reported physical activity level, among the study´s participants. Additional, the research explored the role of perceived needs satisfaction, perceived barriers, and intentions to be more physically active. The research was developed in an experimental setting, within the EXECP project. EXECP project studied the effects of a specific exercise program (cardiorespiratory fitness and strength training) in functionality of adolescents with cerebral palsy. However, the present study did not aim to influence the variables of interest.

Participants with higher level of autonomous motivation reported higher level of physical participation than those with extrinsic forms of motivation. The results concur with the tents of SDT (Deci & Ryan, 1985, 2000a). Similar results were found in studies related to participation in physically leisure activities in adolescents with cerebral palsy (Schulz & Watkins, 2007). Therefore, and considering the findings and the theoretical framework, this study suggests that the forms of motivation was related with physical activity levels among the participants. It has been established that the support of autonomy, especially in health care, is extremely important for promoting sustained health behaviours, such as physical activity (Halvari, 2006; Teixeira, 2006; Williams, 2006). Consequently, the author of this work would like to stress, the strong practical implications. Results emphasized the importance of supporting autonomy in planning and implementing physical intervention. Besides, this research highlighted that most of the research interventions reviewed during this study suffer from a lack of support related to autonomous forms of motivation (Novak et. al., 2013; McBurney, Taylor, Dodd & Graham, 2003). The findings in this report suggests the inclusion of elements supporting intrinsic forms of motivation, as an important element to foster health benefits derived from physical activity among CP population.

Participants with higher level of perceived competence reported higher level of physical activity. The results concur with the tenets of SDT (Deci & Ryan, 1985, 2000a), and

with previous studies that stressed perceived competence as a predictor of physical activity levels (Imms, Reilly, Carlin, & Dodd, 2008; Palisano et al., 2011), and self-reported physical activity levels (Chatzisarantis & Hagger, 2009). Perceived competence among the participants was generally low. The low scores in perceived competence seems to be a common factor in presence of cerebral palsy, as it has been suggested in previous reports (Sherrill, 1990; Shields, Murdoch, Loy, Dodd, & Taylor, 2006). These findings could have important practical implications. Thus, the process seems to be bidirectional, meaning, that not only perceived competence could influence (as it has been pointed) level of physical activity, but physical activity level could determine perceived competence (Verschuren, 2012). This research suggests that physical interventions must take into consideration the enhancement of perceived competence (Ryan & Deci, 2000a; Harter & Pike, 1984) as a tool to promote physical activity among CP population.

Further, participants with higher level of perceived social support were more physically active than those with less perceived social support. The results concur with the tenets of SDT (Deci & Ryan, 1985, 2000a), and with previous studies with adolescents with cerebral palsy. The present study, focused on peers´ support, considering that at participants´ age, peers represent a great influence (Salvy, De La Haye, Borwker & Hermans). Concretely, peers´ support represents an important variable enhancing physical activity (Schulz & Watkins, 2007; Caldwell, 2005; Passmore, 2003; Leversen, Danielsen, Wold & Samdal, 2012; Roberts, 2011). The findings of our research, together with previous studies, suggested that adolescents with cerebral palsy perceive higher social support towards physical activity, when being with peers with similar disabilities (Shikako-Thomas et. al., 2009; Shikako-Thomas & Majnemer, 2012). These data could represent important practical implications. Thus, segregated physical activities could foster social support, and social support could enhance an increase of physical activity levels.

Qualitative data confirmed that perceived barriers regulated by facilitating or hindering participation in physical activities among our participants. The results concur with the tenets of SDT (Deci & Ryan, 1985, 2000a), and with previous studies, where perceived

internal and external barriers are considered, either an influence (Verschuren et. al., 2012) or decisive variable of the levels of physical activity among children with cerebral palsy (Devine & Lashua, 2002; Bedini, 2000; Badia, Orgaz, Verdugo & Ullan, 2013; Dahan-Oliel, Shikako-Thomas & Majnemer, 2012). This research remarks the reduced perceived barriers of two of our participants, Melchor and Gaspar. These results, together with their higher level of self-reported physical activity could represent an important data for practical implementations. Delimiting and reducing barriers may lead to the promotion of physical activity.

Qualitative data did not confirm quantitative data in one of our participants, Baltasar. This finding supports the use of mixed methods to reach a better understanding of the individual variation. Qualitative data was gathered through the direct contact with the participants, either by direct observations of the author of this thesis, or by observations of other members of the research group. Baltasar mentioned that he did not perceive barriers limiting his physical activity behaviour. Opposite findings were found in the analysis of his quantitative data, where Baltasar reported perceived internal and external barriers towards active behaviour. This study suggests that some barriers can be difficult to bring it into the light. The use of questionnaires as a survey, where the participant may express privately, can be of interest for practical implementations when dealing with perceived barriers.

Participants´ intentions to be physically active related with higher level of participation in self-reported physically activities. Our results are supported not only by SDT (e.g. Quested et. al., 2013) but also by other behavioural change theories such as theory of planned behavior or the achievement goal theory (Ajzen, 1992; Atkins, 2015). Intentions are considered a necessary step prior to behaviours (Ajzen, 1992). In our study, intentions to increase level of physical activity, were, generally talking low among the participants. Most of the participants (Melchor and Baltasar) emphasized that intentions were constrained by competing priorities. This is an interesting data with practical implications. Low intentions to become physically active has been suggested in previous research to relate to drop-outs in physical activities among TD children and young (Crane & Temple, 2015). This study does not find any argument against the

possibility that the same phenomenon could be translated to children and young with cerebral palsy. Previous studies suggested similar relation between intentions towards physical activity and drop-outs in TD adolescents. Those studies stablished that low intentions may lead with high probabilities of drop-out the activity (Quested et. al., 2013). This study suggests a deep analysis of the intentions as imperative to predict lack of perseverance in the physical behaviour. It is important to stress this aspect. As it was mentioned, one main limitation found repeatedly in the research, it is that physical interventions do not have long term effects among CP population. The low intentions to increase physical activity levels could mediate the lack of maintenance after intervention. This research suggested a deep analysis of the intentions as a predictor of drop outs, concretely in CP population.

5.1 Limitations of the study and future directions

The main limitation of the study was the small sample size, which compromised the generalizability and the transferability of the findings. It was not possible to see it the results saturated. Moreover, the present study did not have a control group. The study was not able to compare whether the findings were related to cerebral palsy, or to other factors, such age. Future research should include a control group and a, bigger sample size.

In addition to limitations about sample and design, some other elements should be take into consideration for future studies. The intervention was performed in an experimental setting, and individually. Future research should promote the development of the study in an ecological environment and in groups. In addition, some variables in the present study were measured by scales with no published validity values. The inclusion of validated measuring tools could be beneficial for future research.

Moreover, evaluation of the qualitative data was done at the really end of the intervention. No researcher´s log was used during the process, which could lead to a loss of information. Researcher´s log could have been included, and some semi structured interviews to compile same data from each of the participants at the same

point of the intervention could have been organised. In addition. other additions could have been made after the intervention to clarify some of the collected information. For instance, interviews with each of the participants post intervention, to debate profoundly the findings and conclusions, specially related to qualitative data. Future research should take into consideration all these reflections. In addition, a more process-oriented approach, where the experiences of the participants and the researcher during the PA intervention could have been described more in detail. A strength of the study is the combination of the quantitative and qualitative approach, which enabled a deeper understanding of motivation and PA of young males with cerebral palsy.

The present study opened a new window for further research, for a better understanding of the lack of continuity of physical activity behaviour after successful interventions, in presence of cerebral palsy. After all this research process, the main conclusion that we can offer, it is that further research may consider carefully the method design, taking into consideration the previous suggestions. Further, future researcher should understand that the reduced amount of physical activity, more that the cause of an independent variable, could be the consequence of the mix of variables, as it has been pointed in previous literature (Quested et. al., 2013). As a result, future research, should focus not in improving a single variable but, in each of the variables presented in this study. Such variables include not just physiological variables, but psychological variables as well.

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APPENDIXES

Appendix A: Questionnaire (English version)

Give your personal recognition number:

In the next questions, **exercise means all those action that raise heartbeat and make your temporarily out of breath**, e.g. when playing a sport, playing with friends, on the way to the school or in school's PE classes. Exercise is, for example, running, brisk walking, rollerblading, cycling, dancing, skateboarding, swimming, downhill skiing, cross-country skiing, football, basketball and baseball.

1. **Think of the last 7 days. Mark on how many days you have exercised for at least 60 minutes.**

   0 days 1 2 3 4 5 6 7 days

2. **Think about your normal week. Mark on how many days you exercise for at least 60 minutes.**

   0 days 1 2 3 4 5 6 7 days

3. **How much do you exercise during an ordinary week?**

Not at all

About 0,5 hours per week

About an hour per week

About 2-3 hours per week

About 4-6 hours per week

About 7 hours or more per week

4. **For the next parts, circle one number** (0-7) that describes your usual activity level best during the last month.

A. <u>I don't exercise regularly or participate in activities that require strenuous physical effort.</u>

0= I avoid walking and making extra effort, e.g. I always use moving staircases and instead of walking, I drive a car whenever it is possible

1= I walk for fun, I mainly use staircases, sometimes I exercise so that I sweat, and I get out of breath.

B. I regularly exercise in my free time or I work in a position that requires reasonable physical effort, e.g. golf, riding, gymnastics, bowling, going to the gym or working in a garden.

2= 10 to 60 minutes per week

3= Over an hour a week

C. I regularly engage in physically strenuous exercise in my free time, e.g. running or jogging, swimming, rowing, jumping rope, or other strenuous aerobic exercise, like tennis, basket- or handball

4= I run less than 2km per week or play sport equally strenuous for less than 30 minutes per week.

5= I run 2-10km per week or play sport equally strenuous for 30 to 60 minutes per week.

6= I run 10-15km per week or play a sport equally strenuous for 1 to 3 hours per week.

7= I run 15km per week or play a sport equally strenuous for over 3 hours per week.

5. Answer the next statements about yourself as accurately as possible. Choose one alternative that describes your perception the best.

I am good at sports	1 2 3 4 5	I am bad at sports
I think I am one of the best when it comes to sports	1 2 3 4 5	I belong to the people weakest in sports
I'm confident in situations related to exercising.	1 2 3 4 5	I don't trust myself in situations related to exercising.
I belong to the most skilled when Choosing students to exercise related tasks	1 2 3 4 5	I don't belong to the students that get chosen to sport related tasks
I'm one of the first when getting the chance execute sport related tasks.	1 2 3 4 5	I tend to stay in the background, when getting the chance to participate in sport related tasks.
I don't feel limitations because of CP, when exercising.	1 2 3 4 5 6 7	I feel that I'm being limited when exercising because of CP.

6. I try to exercise regularly because:

	1 Completely disagree	2	3	4	5	6	7 Completely agree
I would feel bad if I didn't exercise							
Because other people would be angry if I didn't exercise							
Because I enjoy exercising							
I feel like a failure if I don't exercise.							
I feel like it's the best way to help me							
Others will think I'm weak if I don't exercise							

I feel like I have no choice; others force me to exercise							
Exercising is a challenge, in which I can achieve goals							
I believe that exercising helps me be in better shape							
It is fun							
I'm worried that otherwise I would get in trouble with other people							
It is important for me to achieve goals related to sports							
I feel guilty if I don't exercise.							
I want others to notice that I do as I was asked							
It is interesting to see myself making progress							
Feeling healthy is important to me							

7. In the next part you will answer questions about your participation in sports event. Answer to each row. How often do you exercise during your free time?

	Less than once a week or not at all	Once a week	2-3 days per week	4-5 days a week	6-7 days a week
School organized sport clubs (excluding PE classes)					
Training/competitions organized by a sports organization (teams, clubs)					
Events organized by some other organization (scouts, church etc.) not including sports teams or clubs					
Events organized by companies in the sports industry (gyms, dance schools, ski centres etc.)					
By your own will (yard games etc.)					

8. In the course of the next 6 months, will you increase the amount of free time exercise?

Absolutely not
Probably not
Probably yes
Absolutely yes

9. How much do the next factors prevent you from exercising/ playing sports?

	Restricts very much	**Restricts a lot**	**Restricts by some degree**	**Restricts only by small amount**	**Does not restricts at all**
1 There is no interesting sport directed close to me					
2 It is too expensive					
3 My friends do not exercise either					
4 I'm not a sporty person					
5 My health limits my exercising activity					
6 I think exercising is important, but I have no motivation					
7 I have no time					
8 School sports don't excite me					

9 Sweating during exercise feels disgusting					
Physical activity does not help me					
10 Exercising is boring					
11 Sports are too competitive					
Other reason, what?					

10. Next you will think about what kind of person are you during school sports and free time exercise. Choose the number that fits you the best.

I'm durable	1 2 3 4 5	I tire easily
I'm fast	1 2 3 4 5	I'm slow
I'm strong	1 2 3 4 5	I'm weak
I'm flexible	1 2 3 4 5	I'm stiff
I have a good balance	1 2 3 4 5	I have a bad balance
I'm skilled at handling a ball	1 2 3 4 5	I'mbad at handling a ball
I'm good at running and jumping	1 2 3 4 5	I'm bad at running and jumping
I'm skilled in exercise and games	1 2 3 4 5	I'm not skilled at exercise and games
I can develop my physical features	1 2 3 4 5	I can't develop my physical features
I want to develop my physical features	1 2 3 4 5	I don't want to develop my physical features

11. How long is your trip from home to school?

0 - 1,0 km
1,1 - 3,0 km
3,1 - 5,0 km
5,1 - 10,0 km
10,1 - 20,0 km
over 20 km

12. How do you usually travel the way from school to home? Choose the most common way.

	On foot	By bike	Parent's ride	School organized transportation	By another motor vehicle
In the winter					
In the spring and fall					

13. In the course of the next 6 months, will you travel the trip to school on foot or by bike more often?

Absolutely not

Probably not

Probably yes

Absolutely yes

14. During a typical week: How often do your friends…

	Never	Rarely	Sometimes	Often	Very often
Exercise or play sports with you					
Ask you to exercise with them					
Discuss exercising with you					
Encourage you to exercise or compliment you on your sport accomplishments					

15. What is your favorite form of exercise? (yard games, walking with friends, pokemon go, cycling, swimming)

16. Do you play sports in a sports organization/club/team?

a. Yes, regularly and actively
b. Yes, sometimes
c. Not at the moment, but I have before.
d. No, I don't and never have.

17. What is your favorite sport?

18. What sports do you have as hobbies at the moment? Please note winter and summer sports.

Sport How many times per week How many hours per week?

19. Based on the next claims, estimate your own perceptions of how teachers, other relatives or some other important person supports you

Now think about one important person:

She/he is (mom, teacher; coach, physiotherapist…):

She/he	Completely disagree	Somewhat disagree	I don't disagree nor agree	Somewhat agree	Completely agree
knows how to develop my skills					
knows how to develop my physical traits					
knows how to give easily understandable instructions					
gives encouraging feedback on exercising/training					
explains, why something					

is trained					
takes my opinion and propositions into consideration					
guides towards healthy/athletic ways of life					
motivates to exercise and play sports during free time					
encourages to play other sports too					
is friendly and easy to approach					
instructs interesting/fun exercises					
is encouraging and creates supportive atmosphere					
discusses with me often					

20. If you have quit a hobby related to sports, to which extent the next reasons affected your decision to quit the hobby in a sports organization/ sports team/club

	Not at all	A little bit	Very much
1 Sickness/injury			
2 The hobby was too expensive			
3 Move to a new location			
4 My team's operations stopped			
5 I didn't feel comfortable in a team/group			
6 There wasn't enough team spirit			
7 My friends also quit			
8 Weak success in competitions			
9 I wasn't as good as I wanted to be			

10 I didn't make any progress regarding to my skills			
11 I got tired to the sport			
12 It wasn't exiting enough			
13 I didn't have enough fun			
14 I don't like competing			
15 I had other things to do			
16 I didn't have enough time to be with my friends			
17 I wanted to have some other sport as a hobby			
18 I wanted to invest in studying			
19 I didn't have enough time for other hobbies than sports			
20 Winning and competing were emphasized too much			
21 Training was too tiring/taxing			
22 The quality of training/coaching was weak			
23 I didn't like the coach			
Other reason, what?			

21. If you have stopped playing sport as a hobby, would you be willing to start it again in a sports organization/team/club?

No
Yes, to experiment
Yes, to have as a hobby
Yes, to compete

22. If you have never played sport as a hobby, have you ever considered doing so in a sports organization/team/club?

YES/NO

23. If you do not participate in sport organizations activities, choose maximum of three reasons, why you did not take part in the organizations activities.

I have no motivation (I'm not interested)
I have no time
I haven't found an interesting or suitable sport
It is too expensive

My friends don’t take part in sport organization organized activities either
I have other hobbies
I want to invest in studying
I don’t know how to take a part in the activities
There is no opportunities for hobbies close to my home
I don’t have a ride for the location the hobby takes place
I have been thinking starting a hobby later on
My health limits my chances of having a hobby
Other reason, what?

24. Think about a normal week. On how many days per week do you spend more than two hours of with e.g. television, iPad, phone, game consoles?

0 days
1 day
2 days
3 days
4 days
5 days
6 days
7 days

25. In the course of the next year, will you reduce the amount of time spend with electronics?

Absolutely no
Probably no
Probably yes
Absolutely yes

26. Does your family express their opinions on how much time you spend with television/games/phone etc.

No, they do not.
Yes, they wish that I would spend less time with electronics.
Yes, they set limits to my use of electronics.

27. How well do you do in the next subjects compared to people with the same age as you?

	Very poorly	Poorly	Moderately	Well	Very well
First language					
Math					
Generally in subjects					

28. Do you have any exercise measuring devices?

	No, I don't	Yes, I have, but I don't use it actively	Yes, I have and I use it actively
An app in a smartphone			
A heartrate monitor, an activity tracker or a fitness watch			
Some other, what?			

Thank you for your effort!