THE DEVELOPMENT OF AN ADOLESCENT'S PHYSICAL, EMOTIONAL AND SOCIAL BALANCE AND INCLUSIVE EDUCATION

Dina Bethere[1], Irina Cupere[2], Aivars Kaupuzs[3], Egija Laganovska[2], Velta Lubkina[3], Gilberto Marzano[3], Ilga Prudnikova[3], Mudite Reigase[4], Lorita Rizakova[3], Marite Rozenfelde[3], Zanda Rubene[2], Lucija Rutka[2], Raimonds Strods[2], Sarmite Tubele[2], Svetlana Usca[3], Irena Zogla[2]

[1]Liepaja University, Latvia
[2]University of Latvia, Latvia
[3]Rezekne Academy of Technologies, Latvia
[4]National Centre for Education, Latvia

Introduction

The study summarises scientific and theoretical information that provides the basis for the use of telerehabilitation methods in the promotion of the development of physical, emotional and social balance for 12 – 13 year old adolescents in the context of inclusive education. The study describes the efficiency of modern technologies for the improvement of the physical and mental health of adolescent learners, as well as suggests services of social rehabilitation which could be provided from the distance.

The target audiences of the study are teachers with different professional competence, researchers and the education policy makers.

Topicality of investigations of balance

The topicality of the program for the mitigation and prevention of uncoordinated balance is determined by several factors. Among them are the Public Health guidelines for 2014 – 2020 developed in accordance with the Latvian National Development Plan 2014 – 2020 and the World Health Organization's European regional strategy “Health 2020” to promote public health. These guidelines, among others, aim at increasing the number of healthy

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years of life, as well as the quality of life in Latvia. The document highlights the importance of interdisciplinary cooperation for improving the population's health.

Human beings and the environment make an interconnected dynamic system that is constantly evolving through the interaction process. However, in each individual's life stage such interrelations can be individually distinctive; it is particularly important in adolescence. Research in the various scientific fields confirms that during this period significant changes in an individual's biological, psychological and social aspects occur. In general it can be described as a transition period between childhood and maturity. At the same time an individual's social status in society also changes.

In spite of the fact that scientific literature, media and various adult education courses provide a lot of appropriate information on the promotion of adolescent physical and mental development there are still various pedagogical problems which are rooted in low educational attainment levels, truancy, being sick frequently, inappropriate and aggressive behaviour etc. Such problems cause difficulties not only for parents and teachers, but also of children and adolescents themselves. They create negative emotional experiences, physical discomfort and communication constraints. Rapidly growing and maturing, the adolescent body is really difficult to control, sometimes causing displeasure, irritation and aggression that affect the adolescent's well-being, educational achievement, and communication.

Physical discomfort or serious health problems usually cause negative emotions, lost interest in learning, aggressive behaviour or being introverted. Physical and mental problems accumulate and by restricting mutual understanding, make a negative impact on pupils, teachers and parents. The consequences are teenage aggression, insecurity, fear, disbelief in themselves, loss of interest in specific tasks and life in general or a tendency to manipulate others and prove themselves in a destructive way. In other words, an adolescent's ability to feel good about themselves, the desire to learn and to communicate is related to his/her physical well-being. The context of dynamic development often leads to adolescent needs for a specific support. Most often it affects directly the physical balance of the development area.

In general, physical balance can be defined as the ability to maintain one's musculoskeletal statistical position, operate effectively and control the posture in motion while stabilising free movement and responding to external stimuli (Krauksts, 2003).

However, looking at personal development holistically, it can be concluded that it is not only physical functioning. First, the physical development covers

functioning of the entire body. Second, the motility is more than a movement; there is a relationship between movement and mental development (mental motility) and between movement and perception (sensory motility). At the same time it affects an individual's sensitivity, self-esteem, behaviour, communication, cognitive aspects and the involvement in social relationships (Antor, Bleidick, 2006).

The above mentioned challenges are largely dependent on adolescent physical activity. In this context, the European Commission's Eurydice report on physical education and physical activity in schools in Europe (2013) indicates that physical education can have a significant impact on young people's personal growth, by helping them to become more aware of their physical abilities, improving an individual's overall physical well-being and thereby contributing to the formation of self-reliance and self-esteem (Sporta izglītība un fiziskās aktivitātes Eiropas skolās, 2013). The report emphasizes the importance of physical education in developing pupil's willpower, sense of responsibility, patience and courage. At the same time it ensures realistic support to the growth of their physical and mental capacity. In turn, this contributes to appropriate decision-making, appropriate action is taken to development one's own human qualities, and acceptance and tolerance towards the formation of differences in others. The document emphasises the learner's physical and mental unity in conjunction with these personality traits which need to be constantly developed. This confirms the link between physical health promotion and self-confident, self-assured behaviour in different social situations. At the same time sport activities are to be regarded as an opportunity for children and young people to discover how to deal constructively and cope with negative emotions and stress.

However, currently teenage development problems are often associated with low levels of their physical fitness (Porozovs, Porozova, & Valdemiers, 2012) and lack of regular activities in this field. Such a situation is found through investigations in Latvian schools. This confirms that adolescent and youth health status is being negatively affected by the emotional stress and lack of physical activity. The authors of the study accentuate that despite the fact that regular physical exercise performance positively affects the body's functional state, only a small number of young people pay the necessary attention to their physical fitness and health. Empirical study found that physical activity among Latvian teenagers has decreased. Currently, the number of children and young people with posture defects has increased. Physical fitness is below average for more than a half of the pupils, about a third of them have reached a medium level, and only 6% - above average. Alarming is the fact that about half of the students only

occasionally attend sport activities, while 13% of pupils hold a negative attitude towards them. The study also reveals health problems for about a third of the pupils. Certainly, this leads to truancy for a long period of time (a month or more). At the same time the number of teenagers with physical injuries has significantly increased (Porozovs, Porozova, & Valdemiers, 2012).

This problematic situation may be due to the limited number of sports classes at schools. These are provided only twice a week. By contrast, a large number of pupils have no sports activities in addition to those at schools, or they are occasional or of episodic character. In many cases, the involvement of adolescents in sports is restricted by several factors, such as weather, seasonal opportunities, parental occupation or material deprivation. As a result, the teenagers might have and even have a feeling that their physical activity and health status predominantly depends on different external factors. Therefore, it is important to help them understand that teenagers themselves are responsible and can do much in favour of their physical and mental health and well-being as a whole. At the same time adults also need adequate assistance to understand that adolescent development and growth is closely linked to the parents 'and teachers' growth and their attitude towards physical balance and health; it should be accompanied with the desire and ability to learn from each other, with a sense of responsibility and with respect for each other.

Attention to challenging situations can serve as a source for inspiration about adolescent physical, mental and social development, development of rehabilitation programs, focusing on targetted and effective delivery of support. In this context, major importance is given to the investigation of adolescents' views, as well as that of their parents', teachers', supporting staff's opinion related to the mental and physical nature of the problems and opportunities for prevention.

As human physical and mental development is closely correlated with their state of health and contributes to the quality of life throughout the life-span, achieving the desired results has become an interdisciplinary pedagogical affair. This means that not only scientific knowledge in pedagogy and psychology is essential but also the search for solutions in other sciences and social fields of life, including social rehabilitation becomes topical. Specifically the implementation of inclusive education more than ever needs theoretical underpinnings and well-prepared practical integration achieved through emphasising the use of psychological knowledge in pedagogical practice and psychological regularities in the learning process to facilitate development of the adolescent personality.

To this end, it is appropriate to draw the learners', their parents', teachers', pedagogical and psychological support staff specialists' attention to the oimplementation of innovative rehabilitation methods. Telerehabilitation methods nowadays are considered as an important resource for the implementation of rehabilitation tasks in conjunction with the educational process. ICT developments make it possible to extend the use of new technologies in the field of social rehabilitation. In this way, individually required services are provided through telecommunication networks or online resources. Therefore, it can reduce or even overcome the limits of human development in the physical, as well as in the social field. At the same time telerehabilitation services promote individuals' autonomy, strengthen personal responsibility for their own development and reduce the barriers caused by social environment.

The research aims to analyse theoretical findings, work out theoretical statements for underpinning the usage of the materials and methods of telerehabilitation in two ways: to investigate 12-13-year old teenagers' physical, emotional, and social balance and to facilitate development of balance in the context of inclusive education.

The research follows a theoretically grounded hypothesis that facilitating of the teenagers' physical, emotional, and social balance is effective if the teenagers' development is based on regular reflections; educational and social rehabilitation means mutual interplay to be effective; the content and organisational setting of the teenagers' rehabilitation corresponds to their developmental peculiarities, motives and possibilities.

To reach the above set goals the investigation covers the following objectives

- Analysis of the theoretical sources in pedagogy, psychology, philosophy, and didactic related to the peculiarities of balance in teenagers' physical and mental development.
- Evaluation of the model of inclusive education which is used in Latvia in its international context displayed in normative documents and through theoretical assumptions.
- Analysis of the theoretical assumptions and experiences related to the tools used in telerehabilitation and their effectiveness for supporting teenagers' physical and mental development.

Research tools

- Analysis of the theoretical sources;
- Analysis of the issues by international organisations and their educational policies;

- Analysis of the documents related to the state educational system;
- Analysis of the documented data of the empirical investigations.

Time and place

The research includes 223 sources:

- 152 printed sources,
- 71 electronic sources.

Chapter 1. Physical and Mental Peculiarities of Development in Adolescence

This chapter summarises the findings of various scientific fields in relation to the adolescent age-specific physical and mental peculiarities of development and concludes that the investigated age of individual development is a complex and controversial period. Different key words are used to characterise this period: hormonal storms, change of authorities, conformism, moral relativism, opposition, criticism, self-affirmation, sensitivity, self-esteem, claim elevations, infantilism, emotional compensation reactions, character accentuation. This stage of development is seen in biological, psychoanalytical and psycho-social aspects (Freida, 2010; Guttmannova et al., 2008; Jessor, 1992; Usmiani & Daniluk, 1997; Youngblade & Theokas, 2006; Крайг, Бокум, 2008; Пиаже, 2008).

Looking at the specific new formations in adolescence, the theory suggests a number of areas in one's personal development, which in practical life are closely related to each other or mutually dependent and interfere with each other (Figure 1).

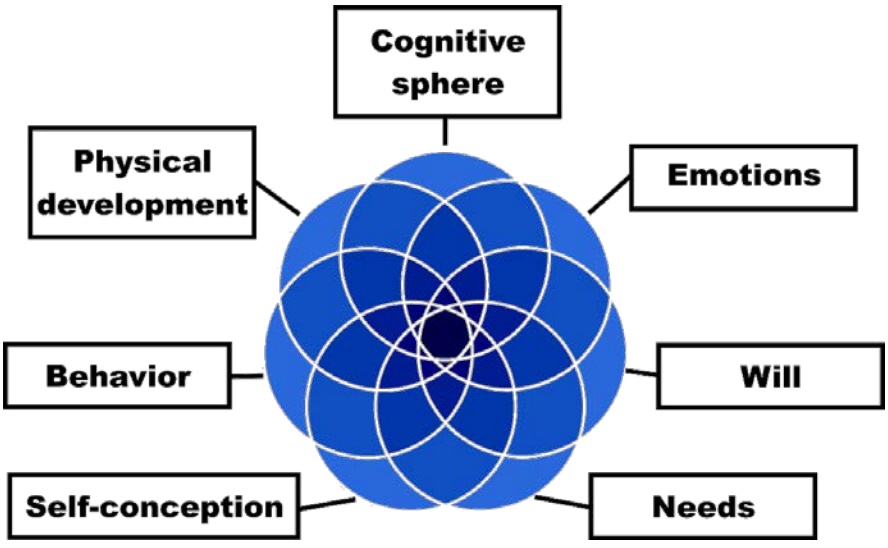

Figure 1. **Interaction of the developmental spheres** (Rutka, 2012, 16)

Physical development includes growth, maturation, health, appearance, other changes and factors which are designated as a transitional step from child to adult;

Cognitive development is one of the most important learning factors, it includes feelings, perception, attention, memory, imagination, speech, thinking, as well as the integration of the cognitive processes;

Emotional development and **will** are inter-related areas;

Behaviour is a complex, diverse, multi-layered and dynamic phenomenon and can be defined as a set of activities and actions carried out by the individual when interacting with the environment (Мамайчук, Смирнова, 2010);

Needs of individuals in the period of adolescence is a set of specific developmental features with a certain structure, which depends on the awareness of their identity and social skills, adequate behaviour development, awareness of their duties and performance, as well as on cooperation and mutual relations with teachers and peers.

Research in the field of developmental psychology shows that the **self**-concept begins forming at a very early and develops throughout life, however, the fastest development takes place within the period of adolescence (Erikson, 1950, 1968; Harter, 2006; Ļevina, 2012; Marsh, 2007; Выготский, 1984).

Chapter 1 summarises the findings; it is concluded that adolescence is very important for development along with research of various overlapping spheres: physical, emotional, will-power, cognitive, self - concept, interpersonal relations, especially with a focus on the balance between physical, emotional, social development and its promotion, including the teenager's harmonious development of the whole person.

Chapter 2. Physical, Emotional, Social Balance: Risks, Challenges and Promotion of Development in Adolescence

This chapter deals with the structure of physical, emotional and social balance (Figure 2).

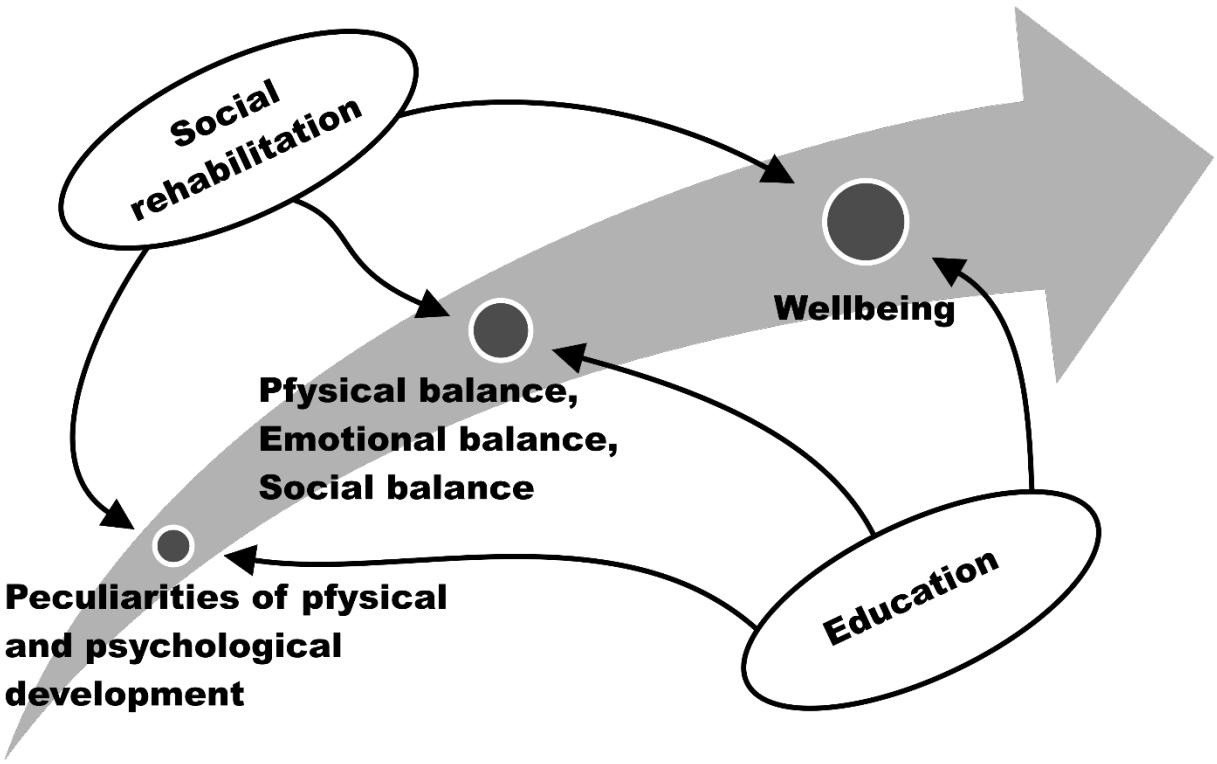

Figure 2. **Progress of Adolescent's Development**

In connection with these items of progress the adolescence inherent challenges are addressed, which could create obstacles to balance investigation.

Having in mind that the sense of **physical balance** is one of the most important of the body's capabilities, allowing a human to maintain a vertical position and navigate spaces, special attention has been focused on research in this area. For this purpose the BIOSWAY portable platform has been used. In this way the research creates opportunities to obtain objective results of neuromuscular control and somato-sensor activity, as well as provide for combination of testing and training technologies.

Emotional balance, in accordance with scientific knowledge, is an essential component of human personal wellbeing, which depends on the relationship between the surrounding world and oneself. Psychological balance and imbalances significantly influence an adolescent's relationships with self- concept and behaviour.

Social balance in accordance with scientific knowledge appears in interactions affecting personal subjective wellbeing and social networking (Diener, 1984). It is also noted that social contacts improve human wellbeing, regardless of the individual's subjective needs (Schwarzer & Leppin, 1989).

Steady coordination problems in children and adolescents are caused by various diseases or injuries (Agrawal et al., 2009; Greve et al., 2013; Potaga,

2001; Portfors-Yeomans & Riach, 2008), that affect an individual's physical, mental and social development.

Summing up the findings described in Chapter 2, it is concluded that balance coordination problems become even more complicated not only for children and adolescents, but also for their families, physicians and educational institutions. This means that any problem that can lead to negative feelings of self-worth, can also lead to more dangerous consequences for mental and physical health and slow down the process of socialisation. Therefore in adulthood, it is important to pay attention to a pupil's physical and emotional balance problems, and it is the most appropriate age to improve balance.

Chapter 3. Special needs of adolescents

This section reminds readers that the research conducted as part of SRP INOSOCTEREHI does not accentuate any specific disorder with respet to the above mentioned balance. In this context, adolescents with special needs are considered to be representatives of the target group, all pupils, who are equally involved in the process of living in their specific environemnt.

The third chapter summarises the findings from the viewpoint that special needs related to adolescent physical development may be affected by a variety of factors - injuries, vision and hearing problems, etc. (Children’s Health, 2014; Harwey & Reid, 2005; Piek & Dyck, 2004; Pitcher, Piek, & Barrett, 2002; Portfors-Yeomans & Riach, 2008; Greve et al., 2013; McGraw et al., 2000; Kejonen, 2003; Lee, Lin, 2007; Bergeest et al., 2011). Personality-forming components of teenagers with special needs like those of any child and adult develop within a system of their interactions. Changes in one sphere of development contribute to changes and new qualities in another. This is the way that development of certain behaviours, attitudes, emotional and physical senses is facilitated. Movement disorders include a diverse range of movement restrictions with different origins and of different degrees, therefore problems of living, of taking part in activities,, prospects and security, belong to a range of spheres, both medical and social care ones, as well as that of education. In this context, much attention is focussed on the improvement of material provisions and the social environment. Findings from a long period of research show that teacher understanding and viewpoints also have a significant impact on adolescent development which impact upon the rules governing personal attitudes towards people with disabilities (Cloerkes, 1997, 7).

Summarising the findings, Chapter 3 concludes that the prevention of social obstacles for adolescents with special needs, like for their peers with unlimited physical potential, self-evaluation skills and promotion of their initiative and abilities is crucial. At the same time it is essential that circumstances are provided which allow people to learn about lifestyle diversity, anticipate the other person's needs and expectations. Nowadays, such learning and development opportunities are considered normal features of inclusive education.

Chapter 4. The Context of Inclusive Education

This chapter emphasises that the Latvian education policy is geared towards implementation of the concept of inclusive education. It is based on non-discriminatory treatment of disabilities, as well as incentives for, and flexibility towards, process-oriented education. During the last fifteen years education policy has focussed on the improvement of support systems. Currently, inclusive education models, practical activities and content are discussed as part of the background for this research. The inclusive approach is subjected to discussions, diverse interpretations, as well as to improvements. However its structure remains unchanged and consists of three interlinked dimensions that characterise an inclusive environment and education (Figure 3).

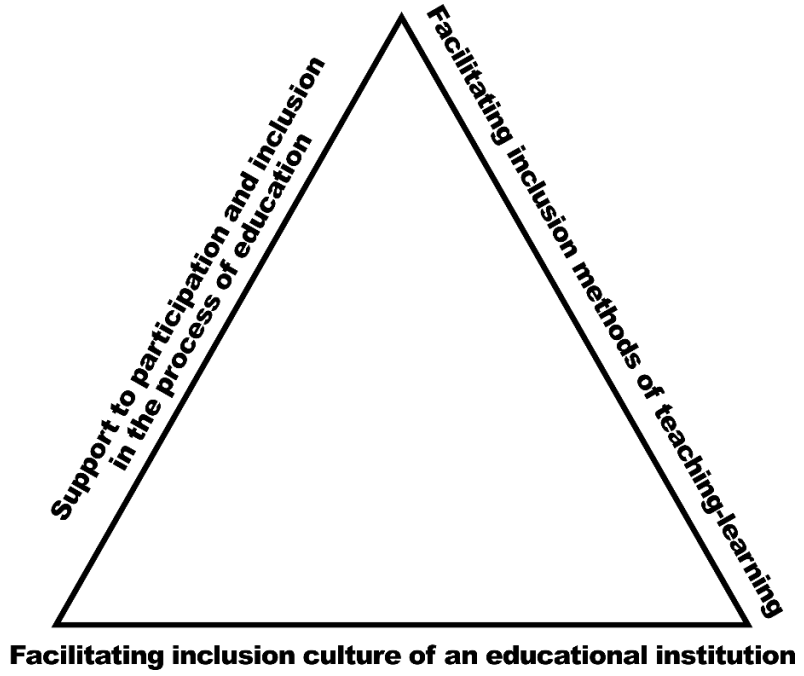

Figure 3. **The dimensions for implementation of inclusive education**
(Boban & Hintz, 2004)

The scheme reflects an acceptable model of education when the culture of an educational institution provides for inclusion and impacts upon inter-related areas: support for participation, security and diversity in the educational process, as well as including appropriate training methods and instruction for use of resources.

To summarise the findings in Chapter 4 (Reid, 2006, Mitchell, 2005; Gurung & Schwartz, 2009; Brooks & Goldstein, 2007; Gurung & Schwartz, 2009; Rose & Tilstone, 2004; Reid, 2006) inclusion is not an event, a situation, a method, but a gradual and successive educational system, a developmental process where the starting point is the student. Inclusion is not a situation or a method, but a gradual and successive education system development process the starting point of which is the learner. Implementation of inclusive education is focussed on the acceptance of diversity and creating of a sustainable model for positive relations between individuals with different physical and social developmental resources.

Chapter 5. Interaction between social rehabilitation and the system of education in developing teenager physical and psychological balance

This chapter emphasises that nowadays the ideas and approaches to the rehabilitation process have changed: from the predominantly medical approach to a psychological and socio-cultural one, both of equal importance (Altman et al., 2010; Brown & Hughson, 1993). In this context, the significance of the individual's own activity is of great importance as well. At the same time this expands the number of rehabilitation clients. Naturally children of various ages, adolescents and young people are included. Along with the development of inclusive education and security, more and more the importance of interaction among the areas of education and rehabilitation becomes clear (Figure 4).

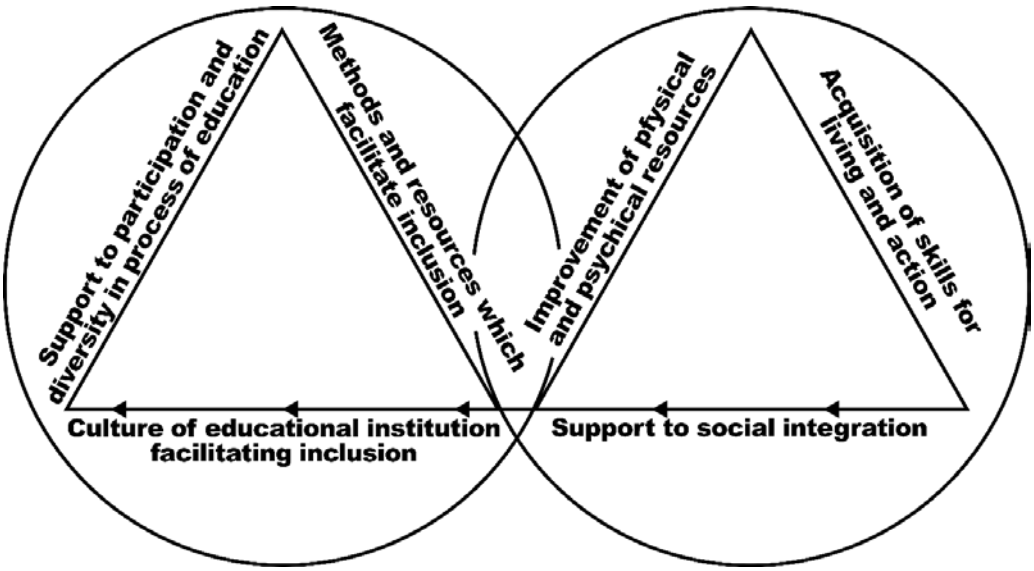

Figure 4. **Interaction between the dimensions of inclusive education and social rehabilitation**

In this chapter the impact of social tele rehabilitation is accentuated which opens up opportunities for wider social rehabilitation services and access for each pupil. This provision also applies to those cases when a nationally regulated minimum of rehabilitation is not provided, however, certain requirements for education and activities that encourage the feasibility and sustainability of rehabilitation are formulated. Thus, pupils have access to the provision of physical and mental resources, as well as the enrichment of these resources directly in conjunction with the educational process.

Chapter 5 introduces the findings of the investigation of adolescent balance measured with BIOSWAY according to the State research program INOSOCTEREHI conducted in schools of Latvia, as well as provides technologies for testing. Perceptions about the importance of the empirical research results might arise from reports on the most typical case descriptions.

Chapter 6. Requirements for effective application of technologies of telerehabilitation in adolescence

This chapter deals with the tele rehabilitation technologies which provide for the possibility to diagnose the rehabilitation needs of certain areas of an individual's **development**. These technologies can be used for diagnostics. Maximum effectiveness and security of this process depends on two conditions:

1. the individual must have an active interest in, and be a keen user of, ICT;
2. the social environment system in which the individual lives and works, promotes adequate motivation to participate and use ICT.

To summarise the findings in Chapter 6 (Leonard, Withers & Sherblom, 2010; Jonassen et al., 2003; Bitter & Pierson, 2002; Nanjappa & Grant, 2003) one can conclude, that by introducing models and methods of tele rehabilitation in conjunction with ethical aspects of teacher actions and communication, effective teacher and pupil cooperation is promoted for the development of adolescent physical, emotional and social balance.

The main findings and conclusions

- Modern political and social requirements stress provision of inclusive education related to teenage pupils – a particularly controversial stage of development. The practical implementation of this concept is complicated on the one hand by the educational paradigm shift, on the other by the contradictory character of teenager socialisation and formation of their self-concept. Furthermore, conceptually inclusive education has expanded the approach from one of taking care of pupils with special needs to an approach that respects student heterogeneity and diversity.
- By integrating a number of assumptions of the researchers from different branches of the sciences, it can be concluded that there is a close relationship between teenagers' physical, mental and social development. Consequently, at the stage of development, when teenagers have a heightened need to identify with adults and achieve autonomy, but the lack of experience to achieve the desired values, there are calls for pedagogical assistance with the investigation of cognitive and emotional development, as well as socialisation and self-concept, communication and special needs, which together lead to internal balance and harmony.
- Developmental disorders consist of several features which can be categorised and classified into groups related to sports and complex health-improving opportunities:
  - Problems related to the body's physical functioning and changes in the structure of the body (impairment);
  - Limitation of activities;
  - Socially created obstacles for teenagers to meet their urgent social need;

  – Participation restrictions.
- The biological nature of balance reveals a complex function of the body's mechanism governed by the visual, vestibular and proprioreceptional system, which in turn, is contributed to by the educational process. Body balance is in close connection with the central nervous system's innervations and practical responses, involving muscle strength balance, as well as a timeframe and these are characteristics which can be trained.
- Provision of support for participation and diversity in the education process requires literacy of human values and their practical implementation; this approach considers what each pupil brings to a situation along with his/her individual potential for physical, mental and social development. Taking into account the fact that teenagers go through substantial changes in biological, psychological, and social aspects of a development, this period is demanding of specific individualised support, especially in the areas of physical, emotional and social balance.
- The appropriate level of support is based on a complex and continuous empirical research into teenagers' needs, enabling the identification of the special needs and the potential risk factors, as well as transference of emphasis from sports events that create an experience of individual events and a 'culture of performing' (Cole et al., 2014), towards the systematic strengthening of health as a priority objective of the school.
- Reduction of developmental risks, as well as prevention of realised disorders should be targetted towards creating objective conditions for an individually oriented rehabilitation system valuable for interaction with teenagers, their parents and agents in educational settings. The efficiency of a social rehabilitation system depends on its regular functioning, compliance and availability, subjective individual interests and abilities. Only under these circumstances is it possible to ensure the teenager's personal responsibility for involvement with, or joining in, the social rehabilitation process.
- Modern technologies and their use in telerehabilitation are effective, theoretically and practically justified for teenager involvement in activities aimes at their social rehabilitation. The efficiency of telerehabilitation as a component of social rehabilitation is dependent upon the teenagers' involvement and integration in inclusive education. To reach this target teenagers need assistance based on professional ethical principles and support by parents, teachers, other memebers of the educational process.
- Theoretically-based knowledge proves the potential usefulness of telerehabilitation for teenagers' physical, mental and social development. At

the same time it allows for the collection and analysis of empirical data in this area.

- The National Research Program INOSOCTEREHI confirms the topicality of further interdisciplinary research, focussing on coordinated research of teenagers‘ development, personal opportunities, and priorities. It also confirms the need to change the paradigm of physical education and implementation of programs supporting this paradigm shift, as well as sports’ class teacher training and continuing education.

The research was developed in cooperation with researchers, doctoral and masters' students representing the direction of Personality Socialisation Research of the Institute of Regional Studies of Rēzekne Academy of Technologies, the Centre of Distance Education of Riga Technical University, the University of Latvia and the Institute of Educational Sciences of Liepāja University.

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