

ADOLESCENTS' PHYSICAL, EMOTIONAL AND SOCIAL BALANCE: A CONCEPT OF PEDAGOGICAL ASSISTANCE AND SOCIAL REHABILITATION

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Abstract

The paper summarizes research findings from two scientific fields (pedagogical and medical), which confirm that there are substantial discrepancies in an individuals' biological, psychological and social development in the period of adolescence leading to a developmental imbalance mainly related to learning. The article offers for discussion a possible conceptual approach and practice-grounded changes of pedagogical provisions to improve teenagers' physical, psycho-emotional balance and social rehabilitation culminating in overall well-being.

***Keywords:** adolescents, physical and mental balance, wellness (well-being), social rehabilitation, inclusive education.*

Introduction

Summing up today's various scientific areas of knowledge, as well as empirical findings it can be concluded that current specific developmental characteristics of adolescents and their individual psychological differences should be investigated to update knowledge about appropriate specific strategies of pedagogical assistance and social rehabilitation, and by doing so avoiding imbalance in teenagers' development and interference of these with the individual's behavior, interpersonal relations and attitudes towards themselves and others (Freid, 2010; Guttmannova Szanyi, & Cali, 2008; Usmani, & Danilik, 1997; Youngblade, & Theokas, 2006; Kraig & Bokum, 2008; Piage, 2008).

One of the National Research Program „Innovative solutions for social tele-rehabilitation in Latvian schools for inclusive education“ (NRP INOSOCTEREHI) aims is to trace adolescent (12-13 years old) holistic development, physical, mental and social balance in the environmental systems. The resources and agents of the individuals' balanced development include also social rehabilitation systems and their functioning. The obtained scope of the data has been analyzed from different perspectives – this article deals with those leading to

the approach of appropriate pedagogical assistance and choice of social rehabilitation. Deeper scientific outcomes are expected after analysis and interpretation of all possible aspects of the research and testing of the regularities defines for each aspect.

Until now, the above mentioned balance problems of teenagers, as well as those associated with psycho-emotional disturbance in the context of adolescents' holistic development and influence of these on learning have not been investigated in Latvia, especially under the impact of socio-political transitions of the country when the discrepancies appeared especially strongly (Lubkina, et al., 2013). Empirical studies in Latvian schools identified the need to investigate the regularities among adolescent physical, mental and social balance on one hand and their learning and well-being on the other in order to specify a conceptual approach and educational objectives. This would provide a base for working out, in an e-format, complex exercises and training activities to provide the adolescents and teachers with tools relevant for assisting in teenager activities, strengthening their health and making this a whole-school responsibility.

Research methods and findings

The research question was: what are the basic regularities which exist between 12-13-year old adolescents' physical, psycho-emotional and social balance, on the one hand, and their learning on the other?

The empirical research base covered 300 teenagers (12-13 year old) and their parents, 140 teachers and 57 medical personnel in 22 urban and rural schools of Latvia.

The research methods: analysis of theoretical sources including documents of international organizations and their educational policies, documents related to the state educational system and experiences in Latvian schools. A multi-perspective and multi-dimensional empirical study has been completed of 12-13 year old adolescents' balance measured using the BIOSWAY system in Latvian schools, as well as questionnaires and interviews with teenagers, their parents, teachers and medical personnel in different urban and country schools of Latvia. Overall, the empirical research has been completed in 22 schools and involved 300 teenagers (12-13 year old) and their parents, 140 teachers and 57 medical personnel. Researchers took into consideration that BIOSWAY provides norms which are tested with respondents 17 years and older, therefore they used additional investigative measures when needed (Biodex Medical Systems, 2017).

Data collection on the adolescents' physical balance has been completed by sensory organization of balance test, postural stability test, Mann - Whitney test, stability frame test.

The data processing included coding, processing in SPSS Statistics, program version 22, and interpreted (Ušča & Lubkina, 2014; Ušča, Žogla, & Rutka 2016).

The following 4 groups of tests were used for data collection and the findings were as follows:

The sensory organization test of balance was set to find the Sway Index in four different positions on a variable surface (hard and soft) and visual conditions (eyes closed, eyes open) to check the visual, vestibular, somatic-sensor functions to determine the extent to which the teenager is able to control senses and keep balance when any of the senses are affected. Imbalance in sensory organization is registered from 16% to 48% of teenagers: 23.7% of adolescents had a deviation of 0.5 or higher from the mean, which indicates problems in maintaining balance.

The total deviation correlate with visual impairment ($r = -0.238$, $p = 0.005$); the deviation to the right - left balance correlated with visual impairment ($r = -0.177$, $p = 0.037$), these are directly related to learning and also emotional stability.

The differences between the adolescents' sensory organization in urban areas (Mean Rank 164,06 un 165,32) and rural areas (Mean Rank 135,61 un 134,23) indicated that rural teenagers more successfully control their sensory organization. In all cases girls demonstrated better results in their sensory organization.

The postural stability test and Mann - Whitney test highlight the teenagers' maintaining the balance center (deviation), as well as the differences among boys and girls which are summarized in the following table. The data only show the state of the matter without confronting them with any norms (Biodex Medical Systems, 2017), and considers general deviation of postural balance at 0.4 when control reaches a critical frame and accentuates the need for more detailed investigation and urgent assistance.

Table 1. Balance differences of postural stability obtained by the test measurements

	General deviation		Deviation towards front - back		Deviation to the right - left	
	p	Mean Rank	p	Mean Rank	p	Mean Rank
Boys	0,050	141,46	0,028	140,66	0,011	139,48
Girls		160,56		161,45		162,76

This data show that in all cases the differences are substantial and the girls' deviation is higher than that of the boys.

The Stability Frame test was used to determine the maximum angle of deflection and under what conditions a teenager is able to achieve an upright position without losing his balance, also how well he controls the centre of gravity. The data was compared with the specified norm provided by the BIOSWAY equipment - in this investigation the stability frame is considered good for only 9.4% of the respondents while in other cases the adolescent's ability to maintain balance is below the norm. The data disclosed a large variety of physical balance problems amongst teenagers which confirm a large range of imbalance in different positions; these caused emotional, intellectual and social discrepancies.

The Mann - Whitney test also showed that there are significant differences ($p = 0,22$) between the control over the center of gravity among boys and girls. In all cases girls display better results than boys, for example, the overall result for the girls' average range value is 162.25, while that of boys is 139.94. The data can be interpreted by the physiological changes in girls which take place about 2 years earlier than those of boys.

The most significant differences of the stability frames ($p \leq 0.001$) in the overall result are among the teenagers of rural and urban areas. This leads to the assumption that teenagers in the rural areas have regular physical activity and it provides a beneficial effect on their balance (Ušča et al., 2016).

Investigation of views. The empirical findings of the study demonstrated that there are objective and subjective contradictions interfering with teenagers', teachers', and medical personnel's views and evaluation of the current situation. The research also prompted a need for a complex study to investigate the interdependence of teenager physical and mental balance with the aim of specifying pedagogical assistance, wider social rehabilitation for adolescent balance control and improvement of their well-being.

In order to identify possible correlations among the data obtained by BIOSWAY and the teachers', medical personnel's, adolescents' and their parents' views several methods have been used. The data obtained from questionnaires were coded and processed in SPSS Statistics

22 program version. Since the findings were non-parametric, the following tests were used: Frequency test, Mann - Whitney test for two independent samples to compare and identify differences, Kruskal - Wallis test for more than two independent samples to compare and identify differences in the level of the studied traits, and the Spearman correlation to determine relationship.

The problem which has been highlighted by the balance tests and evaluation of the data appeared to be even deeper: there was a crucial discrepancy between the objective measurement data and the highlighted problems of balance deviation on the one hand, and the awareness or views about the problems of the teenagers themselves and the adults on the other hand. Here we mention only some data to illustrate the need for a complex approach to teenagers' balance problems and appropriate provision.

The Spearman correlation suggests that learning difficulties are associated with adolescent wellness ($r = -0.270$, $p = 0.027$), and whether they have friends in the class ($r = -0.241$, $p = 0.050$). Also the teenager's ability to maintain balance and the total deviation of postural stability correlate with learning difficulties ($r = -0.424$, $p = 0.001$) while neither teachers nor parents notice this.

Significant differences ($p = 0.021$) are found among the views of teenagers and adults in teenagers' ability for self-control of emotions among peers and adults, as well as balance problems. The maximum significant difference occurs ($p = 0.000$) when assessing whether a teenager faces learning difficulties: teenagers rarely recognize that they face difficulties (Mean rank 163.81) while their parents (Mean rank 233.41) and teachers (Mean Rank 265.60) are more critical.

Significant differences ($p = 0.028$) are found in the assessment of teenagers' learning attentiveness: teenagers more rarely acknowledge the lack of attentiveness (Mean rank 203.02) while their parents (Mean rank 224.22) and teachers (Mean rank 255.65) are more particular and therefore tend to move responsibility to the learners themselves without providing the required assistance. Meanwhile these positions are related to the teenagers' balance and wellbeing problems which also are underestimated by the adolescents and the adults. Consequently the discrepancies highlight the problems of targeted provision of pedagogical assistance and social rehabilitation.

The concept of pedagogical provision and social rehabilitation

The leading assumption of the investigation within the INOSOCTEREHI program, was based on research which suggested pedagogical provisions (a set of physical exercises and social activities are being worked out to follow the conceptual approach) in a holistic approach to adolescent development within a social environmental system; rehabilitation measures and pedagogical assistance for individuals to help the adolescent assume their personally valid targets, ensuring well-balanced development and the achievement of the highest level of wellbeing possible.

Social rehabilitation may be described as the human ability to improve an individual's wellbeing by promoting his/her involvement in social communities, regaining or acquiring abilities to cooperate and communicate at their place of learning or work. This system is related to multi-disciplinary professional competence (Neumann et al., 2010). Therefore, the implementation of rehabilitation measures involve appropriately prepared teams of professionals, who include, for example, psychotherapists, psychologists, occupational therapists, physical therapists, and social educators to provide teenagers and their parents with

targeted assistance. These activities are geared towards the teenagers' interactive participation in problem-solving related to educational and complex balance problems.

The most frequent measures to cope with the above mentioned problems related to rehabilitation, address research-based objectives to increase the individual's participation in the social environment, reduce adolescent suffering from physical, mental and social imbalance and distress in families and school communities. Rehabilitation includes: a) identification and evaluation of the individual needs; b) intervention includes medical treatment to promote reduction of disabilities and support that allows the adolescent maintain quality of life; c) reflection and evaluation of the impact of pedagogical assistance and social rehabilitation.

The efficacy of early identification and the role of balance problems in reducing health risks or complications has been tested and proved by several researchers of the NRP (Kaupužs & Lāriņš, 2015; Ušča & Ļubkina, 2014). Researchers used methods such as Berg's scale, Romberg test UNTERBERGER test Babinska - Weil test, etc. to diagnose disorders in this area which have been approved by Eurofit (since 2005 this method has been approved as a medical technology for use in sports medicine in Latvia). These provide a set of control exercises with which to measure and evaluate speed, strength, flexibility, endurance, coordination capacity, including a sense of balance parameters.

The investigation has lead researchers to the concept of pedagogical provision and social rehabilitation being changed from mainly a medical model to complex treatment which also includes psychological and socio-cultural aspects (Altman et al., 2010; Brown, Hughson, 1993). This approach also accentuates the active involvement of the teenagers who face the imbalance problems and accept personally meaningful measures to maintain complex balance. The need for integration between education and rehabilitation areas becomes clearer through the development of inclusive education (See. Figure 1).

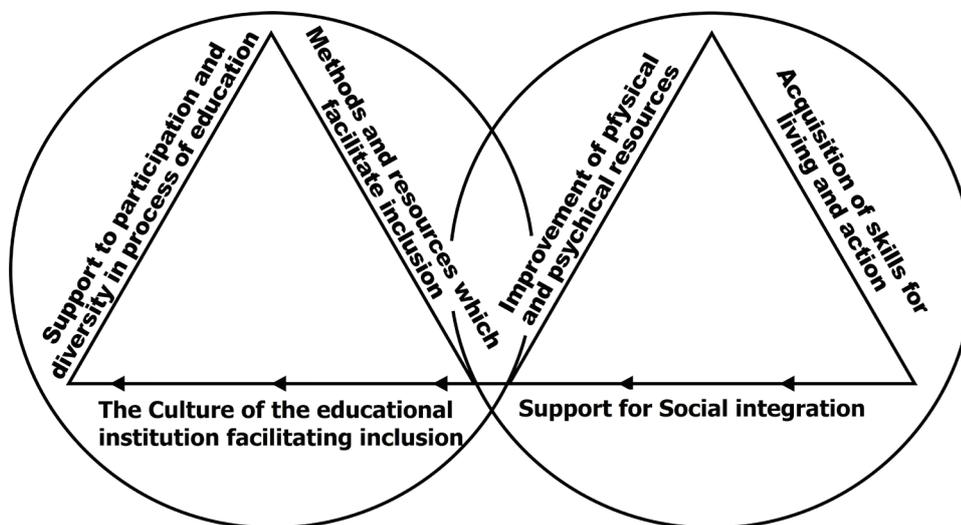


Fig. 1. Interaction between dimensions of inclusive education and social rehabilitation

The research also follows the statement of Hurrelman and Rasum (2012) that a person can believe he/she is physically and mentally healthy when he/she feels the harmony between all areas of his/her development (physical, social, intellectual, and emotional) and assumes a possibility to achieve personally valid targets towards standards of living.

Therefore, complex balance being a dynamic state and process changes under the influence of different factors and thus allows for teachers', parents', medical specialists', social workers' assistance and social rehabilitation leading to the teenagers' wellbeing which in its turn facilitates their achievement of complex balance. Dunn (1959) defined wellness as an integrated method of functioning which is oriented towards maximal realization of the individual's potential. Wellness is an integration of diverse components, i.e. social, emotional, intellectual, and physical. It reflects the human potential to live, to work efficiently and make a significant contribution to society.

At the same time health and wellness conditions are associated (Corbin, Welk, Corbin, & Welk, 2008; Robbins, Powers, & Burgess, 2005) with the quality of life and are regarded as its core.

Conclusions

The researchers of this program have come to the conclusion that the BIOSWAY system provides data to interpret and operate with, and to relate to when choosing or developing a set of exercises to remove the imbalance problems. Besides which, the device has proved that it is easy-to-use in schools of Latvia; in spite that it has been prepared for measuring balance of 17-year olds, the obtained data can be corrected also with the perspective of 12-13-year old adolescents.

The theoretical and empirical findings confirm the theoretical generalizations that 12-13 year old adolescents need specific pedagogical support, especially in the field of physical, emotional and social balance. The following contradictions could be observed and should be seen as the foundation for further research:

1. The objective and subjective differences in the opinions of learners and teachers on the learners' physical and emotional balance, even health, behaviour and communication disclose potential possibilities for intervention. The answers show a range between commonality of views to quite opposite views:
 - in many cases adolescents lack information or are ill-informed about the condition of their physical and mental balance, as well as its importance in their personal development; therefore they demonstrate ignorant or protective indifference next to already existing or potential problems;
 - the most striking is the ignorance or lack of knowledge demonstrated by adults; in several cases the views of learners and teachers do not correspond because of objective reasons (for example, the features are not distinctly displayed, learners and teachers do not pay attention to deviations, or each has his or her own focus), as well as subjective ones (for example, teachers do not know their learners);
 - the difference in views were more often observed in the opinions about emotional balance which can be explained by different subjective levels of significance applied to this phenomenon: the learner has exhibited emotional imbalance once or several times and has forgotten about it or did not see it as significant, while teachers consider these episodes especially significant and allow their views to dominate;
 - the research leads to the conclusion that adolescents as well as the adults need to be educated appropriately to cope with complex problems of balance amongst teenagers; their competencies need to be updated and improved by using the empirical data for interpretation, problem-solving, decision-making and preferably by doing this in joint teams of learners, teachers, parents, medical and other specialists.

2. In many cases data/assessment as understood by learners and teachers as well as medical staff is diametrically opposed. It can happen in the following cases:
 - it is difficult to recognize the essence of individual traits in the behaviour of learners and observable balance disorders (this requires assistance to recognise these and make decision in accordance with the position and functioning of each teenager and adult who is involved in solving the balance problems) ;
 - the same phenomenon is attributed to different, sometimes quite opposite views of significance which is based on the individuals' different personal values, positions and perspectives (this accentuates a need for discussions of the possible perspectives of all persons who are involved in pedagogical or medical provision and social rehabilitation) – a provision is needed which both initiates and prepares for whole school responsibility towards addressing the adolescents' complex balance problems;
 - most likely a teacher, a medical doctor/nurse or even a parent makes conclusions based on only several and episodic cases with no appropriate investigation or at least observation of the dynamics of a particular phenomenon (for example, the learner considers himself emotionally balanced but the teacher characterizes him as showing imbalance);
 - the most often observed data which is supported by empirical evidence is the conclusion that teachers as well as medical staff and even parents do not know their learners sufficiently, they lack updated knowledge and thus competence to identify the problems and provide assistance in a dynamic social setting.
3. The indifference of learners to the obtained data was observed while taking measurements with BIOSWAY This indifference could be relevant to those cases where learners did not feel discomfort due to balance disorders:
 - the data of physical balance measurements are indifferent to the adolescents; they do not relate slight or even unidentified problems to a wider context – emotional, intellectual, and social. In these cases the adolescents will ignore the prepared special materials and provided for individual or group usage to improve the balance or remove already existing problems. Teachers cannot anticipate that any significant number of learners would seek out the set of exercises for correction and maintenance of balance online or would use them without investigating the balance of each individual and providing assisted interpretation of the data leading to the teenagers' self-confidence, self-esteem and self-expression. An internal complex system leading to balance needs a complex external system committed to by the school together with social agents in its environment. The pilot balance testing and conclusions lead to a new way for schools to function:
 - schools and learners need to obtain the necessary data which reflect the dynamics of the learners' physical and mental balance for on-time decisions on pedagogical assistance and social rehabilitation. To facilitate adequate solutions of the problems revealed the INOSCTEREHI researchers not only developed a set of materials but also have created easy-to-use and cheap equipment (a prototype of BIOSWAY) which is going to be tested in practice.
 - to keep an optimal pace between measurements and intervention the obtained data should be interpreted by the investigator and each teenager individually; another round of interpretation and decisions should be practised in adult teams; the third round is devoted to individual or better team activities initiated by a prepared set of

physical and social activities leading to the development of complex balance. The pilot testing proved that the breaks between the rounds should be as short as possible so that every participant remembers the problems that were revealed and the importance the solution.

- a due respect to a teenager's sensitive emotional experience and attitude towards what he has learned about himself should be established and this attitude should be supported and maintained systematically. The learner's immediate decision about the nearest activities is very important so it can be gradually developed into an individual programme of balance improvement.

Discussion

The investigation of complex teenagers' balance issues lead to the following theoretical statements which will be tested in the following steps of the research. These are suggested for the discussion:

1. Based on the complex balance measurements and investigation of the accompanying emotions triggered by the individual interpretation of the data provide for a concept of appropriate pedagogical assistance. Making the complex balance investigation a regular obligation of school staff, as well as their cooperation in upgrading their competence can become one of the central system-building issues in schools which facilitate an interdisciplinary approach to education, include a coordinated provision for adolescents' development; by doing so accentuate their personal priorities and opportunities, which implement in details the change of the pedagogical paradigm. According to this approach the learners' complex and balanced development cannot be limited to activities within physical education or sports classes – this must become a whole-school responsibility.
2. In initial teacher education and professional development the focus should be changed-upgraded competencies with an emphasis on the teachers' responsibility for the learners' well-being and balanced development within a whole-school system; tertiary programs should be improved accordingly.
3. The theoretical and empirical findings of the pilot research confirm that 12-13 year old adolescents need specific and complex pedagogical support and also provisions for social rehabilitation especially in reaching of physical, emotional and social balance leading to their health and well-being.
4. The adults who are involved in or responsible for the learners' well-being should be prepared accordingly to cope with the above described problems. Taking into consideration on the one hand the teenagers' desire to feel independent in their decision-making and choice and revealed by the research ignorance towards their balance matters, as well as a need for regular motivated sports activities the adult groups should involve teenagers to discuss the problems and assist selection of the individually appropriate and meaningful set of activities.

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Summary

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The paper summarizes research findings from two scientific fields (pedagogical and medical), which confirm that there are substantial discrepancies in an individuals' biological, psychological and social development in the period of adolescence leading to a developmental imbalance mainly related to learning. At the same time these involve changes of an individual's social status in a mobile world and accentuate adolescent needs for specific support. Most often these changes directly affect the natural balance of an individual's physical, mental and social development.

The findings obtained by multi-perspective and multi-dimensional empirical research highlight some peculiarities in the needs of 12-13-year-olds, as well as to some extent reduced pedagogical provision and social rehabilitation due to insufficient teachers' and parents' knowledge of the problem. Consequently, the discrepancies between the teenagers' needs for internal balance accentuate the need for external balance through social rehabilitation, appropriateness of pedagogical support and promoting the development of inclusive education.

Analysis of the empirical findings leads to new knowledge about problems of balance for teenagers, confirms the need for sound theoretical generalizations of appropriate social support, formal and non-formal educational provision, social rehabilitation in the current open world with wide access to sources of information and teenagers' interest in e-format activities. The article offers for discussion a possible conceptual approach and practice-grounded changes of pedagogical provisions to improve teenagers' physical, psycho-emotional balance and social rehabilitation culminating in overall well-being.

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