

# Studying Innovation as the Factor in Professional Self-Development of Specialists in Physical Education and Sport

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**Abstract:** Lifetime employment of specialists in physical education and sport is possible only under the conditions of enhancing their professional self-development, whose essential component is innovative activity. The article aims to identify the current level of innovation of professional activities of specialists in physical education and sport. It is also essential to determine the main characteristics of the innovation indicator during professional self-development of specialists in physical education and sport. The selected psychodiagnostic methods have made it possible to diagnose specialists in physical education and sport and reveal the main characteristics of the innovation indicator, namely, average, quadratic deviation, asymmetry and excess. The paper also used following methodologies: self-efficacy diagnosis, the level of subjective control and the style of response to changes. The research sample comprised of specialists in physical education and sport of different age groups, with different experience and qualification degree. In total, the study involved 209 participants. The total dispersion of the selected factors for the research groups with a prevailing conservative style is approximately 61%. The development of capability for innovation in specialists in physical education and sport involves enhancing their psychological qualities such as particular sensitivity to professional changes, readiness to take risks and be responsible for possible failures, independent judgment while taking professional decisions, focus on personal and professional self-development, willingness to search for new professional ideas.

**Keywords:** *conventionalism; stability; activity; passivity; pragmatism; total dispersion; factors.*

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## Introduction

Given the deterioration of the quality of life, the society needs to improve the health of humanity and promote a healthy lifestyle. Humanity is beginning to realize that material well-being and quality of life are directly related to health, and physical culture and sports are a means of preserving it. However, irrespective of the scope of the research, it is innovative activity of specialists in the field of physical culture and sports as active participants in the process that becomes a relevant subject of consideration. Innovations in the field of physical culture and sports are of particular importance at the international level since they are based, on the one hand, on harmonization, intellectual and physical development of individuals and, on the other hand, competitions, fight and entertainment, which are even more connected to materialism and consumerism.

Nowadays, there is a growing interest in innovative activities in professional self-development of specialists in physical education and sport. The study and analysis of innovative activities of specialists in physical education and sport refer to different levels: the society level (Anufrieva & Sokhan, 1982; Babak, 2002; Vasiuk, 1992; Sheremet, Leniv, Loboda, & Maksymchuk, 2019; Gerasymova et al. 2019), sports institutions (Bakhmat et al., 2019; Byvalkevych, Yefremova, & Hryshchenko, 2020; Halaidiuk et al. 2018; Kaletnik, Zabolotnyi, & Kozlovskiy, 2011; Kozlovskiy, 2010; Koziuk, Hayda, Dluhopolskyi, & Kozlovskiy 2020; Maksymchuk et al. 2018; Noskova, & Yasko, 2004), pupils (Behas et al., 2019; Melnyk et al. 2019; Bolanowski, 2005; Golbasi, Kelleci, & Dogan, 2008; Sebalo, & Teslenko, 2020; Sitovskiy et al., 2019). However, regardless of the study context, the innovative activity of specialists in physical education and sport as agents of change is becoming relevant.

The analysis of psychological characteristics of specialists in physical education and sport as agents of change allows distinguishing two core approaches, namely, the institutional approach (Belinskaya, 2006) and the typological approach (Merton, 2006). These approaches to studying the relevance of psychological aspects of innovation activity for specialists in physical education and sport are not mutually exclusive (Bezliudnyi, Kravchenko, Maksymchuk, Mishchenko, & Maksymchuk, 2019).

The problem of innovative activities of specialists in physical education and sport can be solved applying two approaches, namely, a simultaneous analysis of goals and analysis of typical behaviours, an analysis of the modern education system and personality traits of specialists in physical education and sport. Professional self-development of specialists in

physical education and sport under current conditions must be the result of a more complex and innovation-oriented choice (Sikar, 2017). Accordingly, it is imperative to discuss and search for new ways to enhance this choice, which should be based on the analysis of responsibilities of modern physical education specialists incorporating their personal and professional qualities. The modelling of professional future, which reflects subjective views of specialists in physical education and sport on innovative professional self-development, can effectively contribute to their innovative activities (Palamarchuk, 2017).

The analysis of psychological literature shows an increasing interest in the problem of professional self-development. Foreign and Ukrainian scholars primarily solve the following problems: applied theoretical principles for professional future (Zeer, 2002); innovation as a specific form of human activity (Palamarchuk, 2017); a problematic nature of innovation (Alekseev, 2005); developing personal and professional readiness for innovative activities (Shvalb, 2013); enhancing professional stability (Khatsaeva, 2000); developing professional and personal qualities in modern specialists. However, recent studies focus not on the fact that the field of physical cultural, health and sports services has a significant innovation potential, whose value is indisputable in the process of professional development of specialists in the field of physical culture and sports.

The lack of studies concerning specifics, structure, ways and conditions for self-development of specialists in physical education and sport actualizes the need to profoundly and comprehensively justify those ways and means required to achieve high-level of self-development through researching the existing level of innovation in professional self-development of specialists in physical education and sport and discovering some positive ideas about innovation-oriented professional self-development.

## **Materials & methods**

Empirical research was carried out step by step. At the first stage, the problem state was studied, and the goals and objectives were outlined. At this stage, psychodiagnostic tools were selected and tested, and the ascertaining experiment was conducted. In particular, the following methods were used: self-efficacy diagnosis by J. Maddox and M. Scheer (Mogilevkin, 2007); the level of subjective control (Rotter, 1954); the style of response to changes (Bazarov, & Sycheva, 2012). This stage predicted a pilot study, which involved 98 participants. The research sample comprised of specialists in physical education and sport of different age groups, with different

experience and qualification degree. In total, the study involved 209 participants. The interpretation stage included quantitative and qualitative analysis. Statistical data were processed using the SPSS for Windows 21.0 along with a correlation analysis.

As a result of the pilot research of incentives in specialists in physical education and sport to professional self-development, some discrepancy between desirable and actual views on their professional future was revealed. Overcoming this discrepancy is possible through facilitating high-level psychological readiness with specialists in physical education and sport for professional self-development and their ability to innovate. The focus-group research allowed distinguishing four psychological mechanisms, which are required to understand the changes in the process of future professional activities, namely, recognition, justification, agitation and denial. These psychological mechanisms establish a prevailing style of responding by specialists in physical education and sport to the relevance of professional self-development: “acceptance” of professional self-development problems as personally significant is influenced on a positive attitude towards changes in professional future, independent searching for benefits of such activities, as well as new information and mastering new professional skills and approaches; “reasoning” is revealed in understanding to the professional self-development as a necessity, approval of one’s activity, absence of substantially expressed positive emotions from some changes in professional activity; “agitation” implies shifting the emphasis to individual difficulties in professional self-development of specialists in physical education and sport; however, it is experienced as stress, and emotionally tense situation; “objection” is realized in a generally negative attitude towards sustainable professional self-development. An objective lack of the need for professional self-development prevails. One can also observe cognitive denial of the need for professional changes and emotional exclusion from the problems of professional self-development.

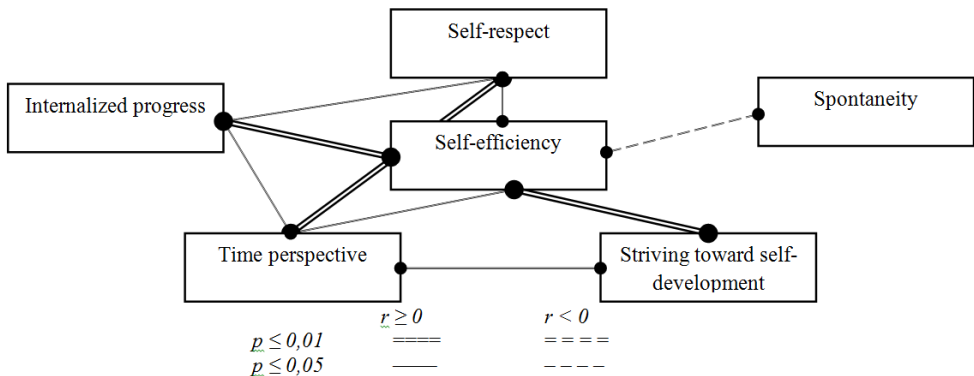
In order to identify the current level of innovation in each of four styles, the authors have divided participants into three groups according to high (10%), average (78%) and low (12%) levels of innovation. They were unable to statistically summarize findings from the high-level innovation group concerning the total number of participants due to insufficient sample size.

Indeed, one should pay specific attention to the substantial homogeneity of a certain number of indicators in this sample, which is expressed in their almost identical high values in all the members of the group. These indicators include performance self-efficacy, general internality,

support for self-actualization and pragmatism in professional self-development. Based on the analysis of the correlation matrices with the Spearman correlation coefficient, the authors have obtained two structures of statistically significant connections that can be represented in the form of correlation constellations.

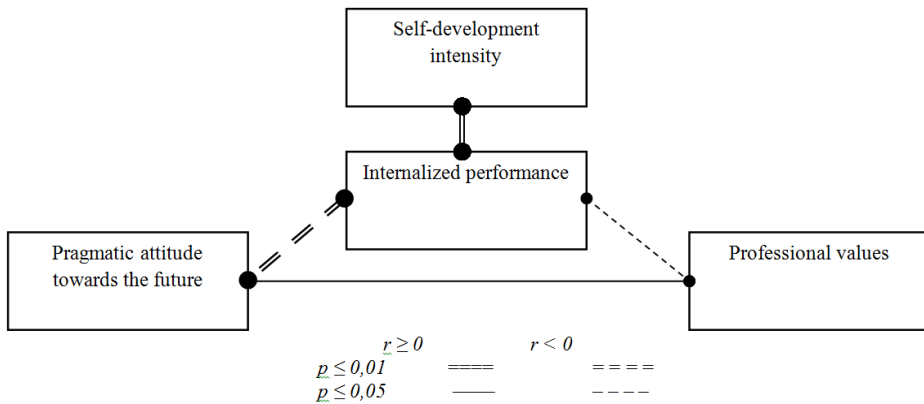
It must be acknowledged that, first, significant connections were found in both high innovation and low innovation groups. However, the authors attempted to minimize the number of correlation structures by simplifying them since they consider it to be excessive to allocate more than two structures to the given sample. In this case, the first structure involved 4% of participants, the second one – 3%. Second, the highlighted correlation structures are not statistically reliable (they describe approximately 30% of dispersion); therefore, only trends can be considered. The obtained correlation constellations are characterized as follows:

1. The constellation “professional intellect – striving towards self-development – personal and professional maturity” (see Fig. 1)



**Fig. 1.** Correlation structure 1 for the group of specialists in physical education and sport with high innovation

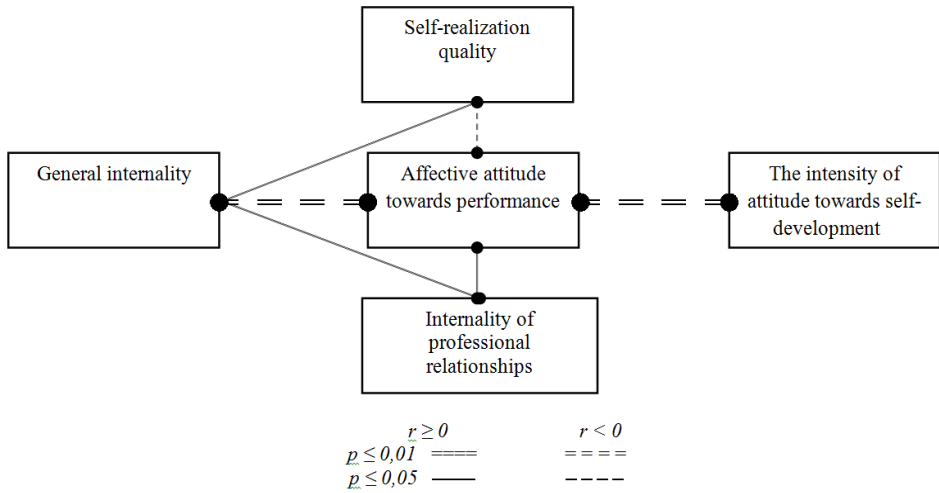
2. The constellation on “readiness for innovation” (see Fig. 2) characterizes future specialists’ explicit awareness of the connection between professional future and their self-development. Moreover, the high values of the indicator of “internalized performance” prove its domination in their system of values. These values also correspond to those of the indicator of “self-development intensity” and the low values of such indicators as “professional values” and “pragmatic attitude toward the future”.



**Fig. 2.** Correlation structure 2 for the group of specialists in physical education and sport with high innovation

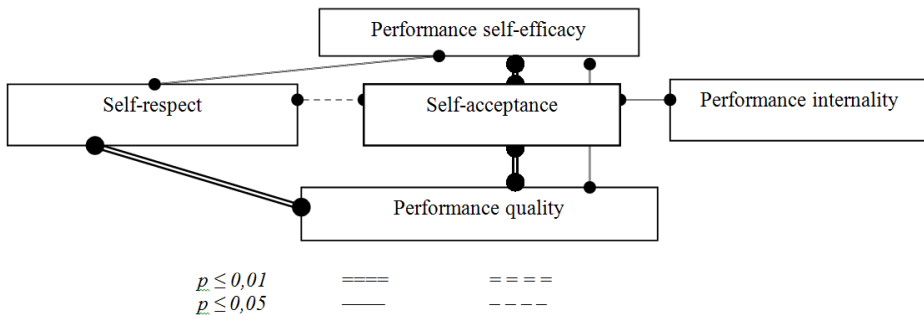
Analyzing the low innovation group, the authors observed a quite similar situation. The insufficient sample size (12% of participants) did not allow for a well-justified generalization concerning the total number of participants. The following values of indicators turned out to be somewhat similar for all the members of this sub-group: conventionalism as the dominant method of responding to professional self-development at the highest values of the indicator of reactive responding, the minimum value of the indicator of cognitive orientations for professional future. Based on the analysis of correlation matrices, the authors obtained two structures of statistically significant connections, which are represented in the form of the following correlation constellations:

3. The constellation on “affective attitude towards performance – low subjective control (see Fig. 3).



**Fig. 3.** Correlation structure 3 for the group of specialists in physical education and sport with low innovation

The constellation 4 is called “performance quality – exclusion” (see Fig. 4). At the heart of this correlation, the structure is participants’ satisfaction with their performance quality. This satisfaction is, in turn, related to self-perception. It is quite tricky for specialists in physical education and sport to perceive themselves as they are, regardless of their preferences and peculiarities. Also, they are unable to evaluate their advantages since they tend to focus on insufficient performance self-efficacy. However, they view themselves and their actions as an essential factor in the organization of their professional activity.



**Fig. 4.** Correlation structure 2 for the group of specialists in physical education and sport with low innovation



The average innovation group turned out to be significantly heterogeneous. It comprised 78% of participants. The authors considered it necessary to divide this particular group into sub-groups based on a prevailing style of responding, since it would contribute to comprehensive consideration of self-development by specialists in physical education and sport in the context of social changes and an analysis of the role of innovations in professional activity with specialists in physical education and sport, which is manifested in emotional, cognitive and behavioural responses. As a result, the authors created two sub-groups: with prevailing conservative and dominant resultative styles.

Statistical methods of data processing included methods of a factor analysis and statistical verification of empirical data significance (processing data with multidimensional statistics methods was carried out based on the SPSS statistics). The factor analysis was performed using the main components of varimax-normalized rotation; the optimal number of released factors and their statistical significance were verified by the criterion of R. Kettel's "rocky oscillation".

The factor analysis was conducted individually based on research findings from each of the three sub-groups. The obtained factor structures allowed diversifying specificity in psychological structures of specialists in physical education and sport with different prevailing styles of responding to the relevance of innovative activity during professional self-development. The interpretation of factor analysis results was based on grouping the indicators with the most significant contributions to the total dispersion and finding prevailing orientations, which explains statistical proximity or discrepancy in the indicators combined in factors.

## Results

Thus, the results of a factorial procedure allowed conducting a comparative analysis of the groups. With the help of the factor analysis, it was possible to reduce the size of the primary data in order not to overload with information and introduce new orientations regarding the mechanism of generating variables, explaining the relationship between the latter. As a result of the factor analysis of the indicators with a prevailing a conservative style, the authors designed the five-factor models, in which five main components are statistically stable, and the maximal coefficients of factor loads retain their factor structure. In the proposed structure, they identified the following levels: self-actualization, values and sensational personal aspects. Each factor obtained a common name based on the most typical

characteristics (see Table 1). The total dispersion of the selected factors for the research groups with a prevailing conservative style is approximately 61%.

**Table 1.** *Distributing dispersion of factor structure in groups with a conservative style of responding*

<b>Factor</b>	<b>Dispersion</b>
Self-actualization – lack of self-realization – self-efficacy	15.78
Value of health	13.62
Performance significance	12.80
Cynicism	9.80
Insensitivity	8.76
<b>Total</b>	60.76%

The first factor (total dispersion – 15.78%) was defined as “self-actualization – self-unrealization – self-inefficiency”. This factor includes the following characteristics: self-efficacy by Schwarzer & Jerusalem (1995) (-0.57), support (0.51), time orientation (0.48), self-esteem quality (-0.47), activity-based self-efficiency (-0.44), spontaneity (0.42). This factor reflects a certain internal conflict of the participants whose high level of self-actualization contrasts with the awareness of the low quality of their own “self“, which is most likely associated with insufficient self-efficiency, including their activities.

The second factor (total dispersion – 13.62%) was defined as “value of health”. It includes such characteristics as health internality (0.52), activity internality (-0.51), the cognitive component of the intensity of attitude toward activities (-0.49), health quality (0.43) and ethical relationships with pupils (0.42). This factor reflects, on the one hand, awareness of one’s responsibility for pupils’ health, which may indicate concentration on it as a substantial value. Simultaneously, the cognitive component of attitude toward professional activity is levelled due to corresponding ethical orientations. On the other hand, there is a connection between efficient performance and external circumstances, such as luck, the presence of other people.

The third factor (total dispersion – 12.8%) was described as “performance significance”. This factor includes professional internality (0.67), self-respect (0.46), performance quality (-0.47), self-acceptance (0.45), quality of public life (0.38). The authors found a contradiction between a

high level of awareness of personal and professional responsibility for performance efficiency and understanding of the low level of its quality. Along with this, one can observe a high level of self-acceptance and self-respect.

The fourth factor (total dispersion – 9.8%) was associated with a low level of values and externality and a high level of one’s livelihood value. The authors described it as “cynicism”. This factor includes such characteristics as values (-0.54), the value of one’s human activities (0.51), general internality (-0.46) and a high level of cognitive orientations concerning professional activities (0.41).

The fifth factor (total dispersion – 8.76%) was defined as “insensitivity”. It included such characteristics as sensitivity (-0,53), communication self-efficacy (0,50), life value (0,49). This factor is the weakest one since it reflects the connection between self-efficacy and low sensitivity – insensitivity to pupils’ problems.

Based on consideration of groups with a prevailing resultative style of responding, it was possible to design a three-factor model, whose main components are also statistically stable, and the maximum coefficients of factor loads retain their factor structure. Besides, another factor structure was identified, whose primary levels are associated with specificity in interaction with pupils. The authors determined ethical, cognitive, and pragmatic levels (see Table 2). The total dispersion of the selected factors for the groups with a prevailing resultative style is equal to 68%.

**Table 2.** *Distributing dispersion of factor structure in groups with a resultative style of responding*

<b>Factor</b>	<b>Dispersion</b>
Ethical orientations – the personal significance of the performance	29.48
Cognitive orientations – the social significance of the performance	21.36
Pragmatic orientations – self-inefficacy	17.60
<b>Total</b>	<b>68.44%</b>

The first factor (total dispersion – 29.48%) was defined as “ethical orientations – the personal significance of performance”. This factor included such features as ethical orientations in interaction with pupils (0.88), social and personal quality of performance (0.72), communication skills (0.70), values (0.69), well-being (0.64), general internality (-0.59), professional internality (0.46), professional actions (-0.41). This factor

indicates low indices of self-efficacy with an external focus of individual locus of control, clearly expressed social trends in behaviours as opposed to individualistic ones. Stereotypical views on one's professional activities do not correlate with risk and innovation.

Cognitive orientations prevail in the attitude toward pupils (0.74) in the second factor (total dispersion – 21.36%). This factor includes performance internality (-0.59), behaviour flexibility (-0.57), failure internality (-0.57), self-respect (-0.56), performance quality (0.51), public life quality (0.44) and overall intensity of performance (0.40).

The third factor (total dispersion – 17.60%) was defined as “pragmatic orientations – self-inefficacy”. It consists of the following indicators: pragmatic orientations in attitude toward performance (0.74), performance self-efficacy (-0.56), self-efficacy by Schwarzer & Jerusalem (1995) (-0.55), self-acceptance (0.51), time perspective (-0.45).

Identified in the form of factor structures, the specificity of each of the groups allowed designing programmatic measures for enhancing professional innovation in specialists in physical education and sport during professional self-development.

Particular attention should be paid to the fact that the active introduction of innovations in the activities of sports organizations will lead to development, which, in turn, will help to encourage specialists in the field of physical culture and sports to improve the quality of life of the population worldwide.

## **Discussion**

The process of conducting this research adheres to relevant ethical rules. First of all, all ethical requirements were considered before the implementation of this research. Next, the authors of the research obtained approval from the ethical committee of the university. After that, the respondents were informed about both the goals and objectives of the research and were interviewed. Moreover, they were assured that the participation in the research was voluntary, and they were entitled to quit it at any time so that they should not feel under pressure.

As a result of theoretical and methodological approaches, the results of the experiment were considered and generalized for the discussion that one can reflect on whether the model of innovation development as the factor in professional self-development of specialists in physical education and sport implies creating a new professional environment (Maksymchuk et al., 2018) or involves changing personality traits of physical education

teachers and trainers due to developing certain psychological qualities (Palamarchuk, 2017). Some researchers state that professional self-development of specialists in physical education and sport should be considered in the context of internal qualitative self-changes (Maksymchuk et al., 2018), which occur as a result of their comprehending the need to self-analyze and compare their activities with those of their colleagues. Others emphasize the need of specialists in physical education and sport to consciously interact with the social environment (Halaidiuk et al., 2018) so that they can develop their professional qualities. However, the authors are sure that the core of self-development is physical education specialists' willingness to freely engage in innovative activities, as opposed to professional actions under the pressure of social coercion.

The issue of professional self-development of specialists in physical education and sport is reviewed through the process that involves creating somebody's own and unique meaning of life, a system of professional values and goals, implementation of which make the performance of specialists in physical education and sport more effective. Professional self-development of future specialists in physical education and sport should include several specific sequences of projective actions laid down on the subconscious actions, which are used automatically to achieve specific goals of innovation activity. The process of modeling one's innovation activity reveals the attempts of future specialists in physical education and sport to search and manifest personal uniqueness and should consist of the following stages: comprehending the need for innovative activities, searching and evaluating information on possible innovation activities, realizing need in the innovative self-development, searching and assessment of information about evaluating effectiveness of one's innovation activity (Alekseev, 2002). The level of professional self-development of future specialists in physical education and sport depends on the degree of innovation relevance determined by the needs of pupils as well as the degree of future specialists' comprehending the importance of innovations in professional activity (Bazarov, & Sycheva, 2010).

Three vectors can define the peculiar properties of researching future specialists' self-development. The first one represents the strategy for professional activity at the level of "innovation" and "conventionalism". The orientation toward "innovation" is manifested in future specialists' high awareness of the need to implement innovation activity into the whole system of professional self-development. Those specialists in physical education and sport who tend to be more "conservative" hesitate to change their behaviour and goals after external factors have been modified. The

second vector is outlined by the degree of professional activity intensity, which is determined by the level of activity and passivity of specialists in physical education and sport by themselves. The third vector determines possible means of achieving goals. Therefore, professional self-development of specialists in physical education and sport should be innovative, pragmatic and active.

The stimulating factor in self-development of specialists in physical education and sport is mainly their pragmatism, that is, the need for professional self-expression, self-realization and recognition (Dudikova, 2011). However, the emergence of real problems in the field of physical education urges respective specialists to go beyond their pragmatism. Professional self-development of specialists in physical education and sport under the current conditions must be the result of a more complex and innovation-oriented choice. In accordance with these facts, there arises a problem to analyze and justify the psychological aspects of designing innovative activities of future specialists in physical education and sport.

## **Conclusions**

The leading factors and conditions for enhancing innovation as the factor in professional self-development of specialists in physical education and sport are their personal and professional values, increased demand on quality educational services, support for these specialists' initiatives and supervision of their performance. Based on research findings, three components of innovation-oriented self-development of specialists in physical education and sport have been identified. They include designing an innovative idea, orienting toward quality educational services, establishing the personal and professional meaning of innovation activity as the sphere of psychological and professional responsibility of specialists in physical education and sport.

The results of empirical research prove that the majority of specialists in physical education and sport have insufficient levels of innovation skills. Thus, these specialists should be significantly encouraged to implement innovation activities into their professional activities. It indicates psychological unwillingness of specialists in physical education and sport to adjust to systemic innovations during professional self-development. The analysis of research findings shows that the average level of innovation skills (78%) prevails along with dominant conservative and resultative styles of performance.

The paper proves that innovative self-development of specialists in physical education and sport can be ensured through a specially designed psychological technology of projecting professional activities. The research results of the current level of professional innovation activities of specialists in physical education and sport show their recognition of the innovation factor as a leading one in the structure of self-development. Thus, more attention should be paid to innovative activities in self-development since they increasingly determine the basis of views of modern specialists in physical education and sport on their career progress.

The development of capability for innovation in specialists in physical education and sport involves enhancing their psychological qualities such as particular sensitivity to professional changes, readiness to take risks and be responsible for possible failures, independent judgment while taking professional decisions, focus on personal and professional self-development, willingness to search for new professional ideas.

Considering the relevance of the discussed problem for today, it is imperative to further study its multi-faceted aspects in various fields of psychological science and practice.

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### **Acknowledgement**

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Each author conducted research with a group of respondents at his or her university to ensure the reliability of the research sample. The research involved a total of 209 respondents. The interpretation stage included quantitative and qualitative analysis. Statistical data were processed using the SPSS for Windows 21.0 along with a correlation analysis. Each author conducted such an analysis independently to ensure the accuracy of the results. All authors have repeatedly held joint meetings to select diagnostic methods and their results. In particular, the following methods were used: self-efficacy diagnosis by J. Maddox and M. Scheer (Mogilevkin, 2007); the level of subjective control (Rotter, 1954); the style of response to changes (Bazarov, 2012).

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### **References**

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- Alekseev, N. G. (2002). *Proyektirovaniye i reflektivnoye myshleniye* [Designing and reflexive thinking]. *Razvitiye lichnosti* [Personality Development], 2, 43–58.  
<http://www.dates.gnpbu.ru/2-7/Alekseev/alekseev.html>

- Alekseev, N. G. (2005). Metodologicheskiye printsipy proyektirovaniya obrazovatelynykh system [Methodological principles of designing educational systems]. *Proyektirovaniye v obrazovanii: problemy, poiski, resheniya* [Design in Education: Problems, Searches, Solutions], 4, 27–41.
- Anufrieva, R. M., & Sokhan, L. I. (1982). *Stil zhizni lichnosti. Teoreticheskiye i metodologicheskiye problemy* [Personality lifestyle. Theoretical and methodological problems]. Kyiv: Scientific Thought.  
<https://elib.pstu.ru/vufind/Record/RUPSTUbooks146070>
- Babak, M. I. (2002). Formuvannya osobystosti medyka tretoho tysyacholittya [Forming personality of medical specialists in the third millennium]. *Medychna osvita* [Medical Education], 1, 49–50.
- Bakhmat, N., Maksymchuk, B., Voloshyna, O., Kuzmenko, V., Matviichuk, T., Kovalchuk, A., Martynets, L., Uchytel, I., Solovyov, V., Manzhos, E., Sheian, M., Alieksiciev, O., Slyusarenko, N., Zhorova, I., & Maksymchuk, I. (2019). Designing cloud-oriented university environment in teacher training of future physical education teachers. *Journal of Physical Education and Sport*, 19(4), 1323–1332.  
<https://efsupit.ro/images/stories/august2019/Art%20192.pdf>
- Bazarov, T. Yu., & Sycheva, M. P. (2012). Sozdaniye i aprobatsiya oprosnika “Stili reagirovaniya na izmeneniya” [Creating and verifying the questionnaire, titled “Styles of Response to Changes”]. *Psikhologicheskie issledovaniya* [Psychological Studies], 5(25), 34–43.  
<http://psystudy.ru/index.php/num/2012v5n25/724-bazarov25.html>
- Behas, L., Maksymchuk, B., Babii, I., Tsymbal-Slatvinska, S., Golub, N., Golub, V., & Maksymchuk, I. (2019). The influence of tempo rhythmic organization of speech during gaming and theatrical activities on correction of stammering in children. *Journal of Physical Education and Sport*, 19(4), 1333–1340. <http://efsupit.ro/images/stories/august2019/Art%20193.pdf>
- Belinskaya, E. P. (2006). *Identichnost lichnosti v usloviyakh sotsialnykh izmeneniy* [The identity of personality under the conditions of social changes]. (Postdoctoral thesis). M. V. Lomonosov Moscow State University, Moscow. <https://www.dissercat.com/content/identichnost-lichnosti-v-usloviyakh-sotsialnykh-izmenenii>
- Bezliudnyi, O., Kravchenko, O., Maksymchuk, B., Mishchenko, M., & Maksymchuk, I. (2019). Psycho-correction of burnout syndrome in sports educators. *Journal of Physical Education and Sport*, 19(3), 1585–1590.  
<https://efsupit.ro/images/stories/septembrie2019/Art%20230.pdf>
- Bolanowski, W. (2005). Anxiety about the professional future. *International Journal of Occupational Medicine and Environmental Health*, 18(4), 367–374.  
<http://test.imp.lodz.pl/upload/oficyna/artykuly/pdf/full/Bol8-04-05.pdf>



- Byvalkevych, L., Yefremova, O., & Hryshchenko, S. (2020). Developing technical creativity in future engineering educators. *Revista Romaneasca pentru Educatie Multidimensionala*, 12(1), 162–175. <https://doi.org/10.18662/rrem/206>
- Dudikova, L. V. (2011). *Formuvannya hotovnosti do profesiynoho samodoskonalennya u maybutnikh likariv* [Developing readiness for professional self-development in future doctors]. (PhD thesis). M. Kotsiubynskiy Vinnytsia State Pedagogical University, Vinnytsia. <http://library.vspu.net/handle/123456789/670>
- Gerasymova, I., Maksymchuk, B., Bilozerovala, M., Chernetska, Yu., Matviichuk, T., Solovyov, V., & Maksymchuk, I. (2019). Forming professional mobility in future agricultural specialists: the sociohistorical context. *Revista Romaneasca pentru Educatie Multidimensionala*, 11(4), 345–361. <https://doi.org/10.18662/rrem/195>
- Golbasi, Z., Kelleci, M., & Dogan, S. (2008). Relationships between coping strategies, individual characteristics and job satisfaction: a cross-sectional questionnaire survey. *The International Journal of Nursing Studies*, 45(12), 1800–1806. <https://doi.org/10.1016/j.ijnurstu.2008.06.009>
- Halaidiuk, M., Maksymchuk, B., Khurtenko, O., Zuma, I., Korytko, Z., Andrieieva, R., Strykalenko, Y., Zhosan, I., Syvokhop, Y., Shkola, O., Fomenko, O., & Maksymchuk, I. (2018). Teaching approaches in extracurricular physical activities for 12-14-year-old pupils under environmentally unfavourable conditions. *Journal of Physical Education and Sport*, 18(4), 2284–2291. <http://repository.ldufk.edu.ua/handle/34606048/16733>
- Kaletnik, G. M., Zabolotnyi, G. M., & Kozlovskiy, S. V. (2011). Innovatsiyni modeli upravlinnya stratehichnym ekonomichnym potentsialom suchasnykh ekonomichnykh system [Innovative models of strategic management economic potential within contemporary economic systems]. *Aktualni problemy ekonomiky* [Actual Problems of Economics], 4(118), 3–11. [https://www.researchgate.net/publication/298002657\\_Innovative\\_models\\_of\\_strategic\\_economic\\_potential\\_management\\_within\\_contemporary\\_economic\\_systems](https://www.researchgate.net/publication/298002657_Innovative_models_of_strategic_economic_potential_management_within_contemporary_economic_systems)
- Khatsaeva, D. (2000). *Razvitiye professionalnoy ustoychivosti u studentov meditsinskikh vuzov – budushchikh vrachey* [The development of professional sustainability among medicine students – future doctors]. (PhD thesis). K. L. Khetagurov North Ossetian State University, Vladikavkaz. <http://www.lib.ru-net/diss/cont/118606.html>
- Koziuk, V., Hayda, Y., Dluhopolskyi, O., & Kozlovskiy, S. (2020). Ecological performance: ethnic fragmentation versus governance quality and sustainable development. *Problemy ekorozwoju – Problems of Sustainable Development*. 15(1), 53–64. <https://ekorozwoj.pollub.pl/no29/h.pdf>

- Kozlovskiy, S. V. (2010). Ekonomichna polityka yak bazovyi element mekhanizmu upravlinnya faktoramy rozvytku suchasnykh ekonomichnykh system [Economic policy as a basic element for the mechanism of managing development factors in contemporary economic systems]. *Aktualni problemy ekonomiky* [Actual Problems of Economics], 1(103), 13–20. [https://www.researchgate.net/publication/293721347\\_Economic\\_policy\\_as\\_a\\_basic\\_element\\_for\\_mechanism\\_of\\_managing\\_development\\_factors\\_in\\_contemporary\\_economic\\_systems](https://www.researchgate.net/publication/293721347_Economic_policy_as_a_basic_element_for_mechanism_of_managing_development_factors_in_contemporary_economic_systems)
- Maksymchuk, I., Maksymchuk, B., Frytsiuk, V., Matviichuk, T., Demchenko, I., Babii, I., Tsymbal-Slatvinska, S., Nikitenko, A., Bilan, V., Sitovskiy, A., & Savchuk, I. (2018). Developing pedagogical mastery of future physical education teachers in higher education institutions. *Journal of Physical Education and Sport*, 18(2), 810–815. <http://efsupit.ro/images/stories/iunie2018/Art%20119.pdf>
- Melnyk, N., Bidiuk, N., Kalenskiy, A., Maksymchuk, B., Bakhmat, N., Matviienko, O., Matviichuk, T., Solovyov, V., Golub, N., & Maksymchuk, I. (2019). Modely y orhanyzatsiyone osobyne profesyonalne obuke vaspytacha u pojedynym zemlyama Evropske Unyye y u Ukrayiny [Models and organizational characteristics of preschool teachers' professional training in some EU countries and Ukraine]. *Zbornik Instituta za pedagogska istrazivanja*, 51(1), 46–93. <https://ipisr.org.rs/images/pdf/zbornik-51/Natalija-Meljnik.pdf>
- Merton, R. (2006). *Sotsialnaya teoriya i sotsialnaya struktura* [Social theory and social structure]. Moscow: AST. <https://www.twirpx.com/file/596791/>
- Mogilevkin, E. A. (2007). *Karyernyy rost: diagnostika, tekhnologii, obuchenije* [Career growth: diagnostics, technology, training]. Saint Petersburg: Speech. <https://www.twirpx.com/file/1527270/>
- Noskova, O. G., & Yasko, B. A. (2004). O krizisakh professionalno-lichnostnogo razvitiya vracha [On crises of doctor's professional and personal development]. *Vestnik Moskovskogo universiteta* [Moscow University Bulletin], 14(2), 21–29. [http://www.library.omsu.ru/cgi-bin/irbis64r/cgiirbis\\_64.exe?LNG=&Z21ID=&I21DBN=MARS\\_PRINT&P21DBN=MARS&S21STN=1&S21REF=&S21FMT=fullw\\_print&C21COM=S&S21CNR=&S21P01=0&S21P02=1&S21P03=A=&S21STR=%D0%9D%D0%BE%D1%81%D0%BA%D0%BE%D0%B2%D0%B0,%20%D0%9E.%20%D0%93](http://www.library.omsu.ru/cgi-bin/irbis64r/cgiirbis_64.exe?LNG=&Z21ID=&I21DBN=MARS_PRINT&P21DBN=MARS&S21STN=1&S21REF=&S21FMT=fullw_print&C21COM=S&S21CNR=&S21P01=0&S21P02=1&S21P03=A=&S21STR=%D0%9D%D0%BE%D1%81%D0%BA%D0%BE%D0%B2%D0%B0,%20%D0%9E.%20%D0%93)
- Palamarchuk, O. M. (2017). Innovatsiyna diyalnist sotsialnykh pratsivnykiv yak faktor sotsialnoho rozvytku [Innovative activities of social workers as the factor in social development]. *Molodyy vchenyy* [Young Scholar], 11(51), 821–825.
- Rotter, J. B. (1954). *Social learning and clinical psychology*. Englewood Cliffs, NJ: Prentice-Hall. <https://psycnet.apa.org/record/2005-06617-000>

- Schwarzer, R. & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in Health Psychology: a User's Portfolio. Causal and Control Beliefs* (pp. 35–37). Windsor, UK: NFER-Nelson. [https://www.drugsandalcohol.ie/26768/1/General\\_Self-Efficacy\\_Scale%20\(GSE\).pdf](https://www.drugsandalcohol.ie/26768/1/General_Self-Efficacy_Scale%20(GSE).pdf)
- Sebalo, L., & Teslenko, T. (2020). Future teacher training for self-education activity in physical education at elementary school. *Revista Romaneasca pentru Educatie Multidimensionala*, 12(1), 105–119. <https://doi.org/10.18662/rrem/202>
- Sheremet, M., Leniv, Z., Loboda, V., & Maksymchuk, B. (2019). The development level of smart information criterion for specialists' readiness for inclusion implementation in education. *Information Technologies and Learning Tools*, 72, 273–285. <https://journal.iitta.gov.ua/index.php/itlt/article/view/2561>
- Shvalb, Yu. M. (2013). *Ekoloho-psykholohichni faktory yakosti zhyttya v umovakh rozvytku suchasnoho suspilstva* [Ecological and psychological factors of quality of life under the conditions of modern society development]. Kirovograd: Imex-LTD. <https://www.twirpx.com/file/1875888/>
- Sikar, I. P. (2017). Struktura hotovnosti do profesynoyi samorealizatsiyi [The structure of readiness for professional self-realization]. *Naukovyi visnyk Mykolainkoho natsionalnoho universytetu imeni V. O. Sukhomlynskoho* [Scientific Journal of O. V. Sukhomlynskyi Mykolaiv National University. Series: Pedagogical Sciences], 2(57), 136–149. [http://mdu.edu.ua/?page\\_id=1502](http://mdu.edu.ua/?page_id=1502)
- Sitovskiy, A., Maksymchuk, B., Kuzmenko, V., Nosko, Y., Korytko, Z., Bahinska, O., Marchenko, O., Nikolaienko, V., Matviichuk, T., Solovyov, V., Khurtenko, O., Slyusarenko, N., Zhorova, I., & Maksymchuk, I. (2019). Differentiated approach to physical education of adolescents with different speed of biological development. *Journal of Physical Education and Sport*, 19(3), 1532–1543. <http://repository.ldufk.edu.ua/handle/34606048/23502>
- Vasiuk, A. G. (1992). *Psikhologicheskiye osobennosti professionalnogo razvitiya* [Psychological features of professional development]. (PhD thesis). K. Tsiolkovskiy Kaluga State Pedagogical Institute, Kaluga. <https://www.dissercat.com/content/psikhologicheskie-osobennosti-professionalnogo-stanovleniya-lichnosti-vracha/read>
- Zeer, E. F. (2002). *Professionalno-obrazovatelnoye prostranstvo lichnosti* [The professional educational space of personality]. Yekaterinburg: RGPPU. <http://flogiston.ru/reviews/books/zeer>