



# STAGES OF READINESS IN THE UNDERTAKING OF PHYSICAL ACTIVITY AND LEVELS OF PHYSICAL FITNESS AMONG POLISH AND TURKISH CHILDREN

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## Abstract

*Acquiring competences in the area of physical culture depends on the intention of physical activity, as well as on the level of physical fitness. It is important to learn the factors determining physical fitness; therefore the purpose of this research was to determine the relationship between the stages of readiness for regular physical activity and the level of physical fitness of children from Poland and Turkey. The research included pupils aged 14 living in the Raciborz area in Poland and in the area of the city of Balıkesir in Turkey. Readiness for regular physical activity was assessed using a special algorithm in accordance with the concept of the transtheoretical model (TM). In this research the interpretation of TM was accepted for the assessment of intentional behavior. To determine the level of physical fitness, the European Fitness Test - Eurofit was used. Statistical analyses showed statistically significant differences. Of the 8 tests carried out, in six - a larger level was obtained by respondents from Poland and in five of them these were statistically significant differences. In 2 of the tests carried out, the young people from Turkey reached an average higher level. The correlation coefficient between the stages of readiness to undertake physical activity and physical fitness tests was calculated to achieve the main objective. The vast majority were low dependencies. On the basis of the conducted research, it was found that the studied group of Polish youth was characterized by a higher level of physical fitness than their peers in Turkey. There was no significant relationship between the stages of readiness to undertake physical activity and the results of fitness tests. The need for further research was concluded.*

**Key words:** physical fitness, Eurofit, transtheoretical model, nationality.

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## Introduction

One of the dangerous effects of the universal consumption of post-modern mass culture and consumer civilization is, among other things, physical passivity. A reluctance to participate in physical activity creates the phenomenon of decomposition amongst the needs of the younger generation. Life based on the patterns of consumer civilization does not lead to a realization of needs that result in supporting development and human health [22]. Positive attitudes towards physical activity are the norm of a small part of society and they often appear too late. Some authors associate the reasons for

the expansion of physical passivity with socio-political transformations, with the dissemination of patterns of mass Western culture. The uncontrolled growth of media techniques and information, the isolation of man from nature, the significant and various limitation of physical activity characterize phenomena dangerous for development and human health.

Acquiring competences in the area of physical culture depends on the intentions of physical activity; it also affects emotional health, including self-esteem [2,13]. Some studies point to the fact that self-efficacy determines how people spend their free time. People displaying this characteristic are more physically active. Self-

efficacy allows one not only to maintain the recommended physical activity, but also to prevent its reduction [10].

Limiting physical activity leads to a decrease in physical fitness and efficiency, especially among school-age children, which later affects their life and health. Establishing the factors determining physical fitness is an important issue here. A diverse cultural background seems justified as one of them. Available publications draw attention to the impact of socio-economic factors as the basis for reduced physical activity and consequently, physical fitness. However, in literature there is a lack of references to cultural conditions. Considering these reflections, the aim of the research was to determine the relationship between the stages of readiness for regular physical activity and the level of physical fitness of children from Poland and Turkey.

## Materials and methods

The research included pupils aged 14 living near Raciborz in Poland and in the vicinity of the town of Balikesir in Turkey. These locations are similar in terms of population, demographic profile and employment structure. The selection of schools in which pupils were examined was selected randomly.

In Turkey, the age of respondents reflects completing the period of compulsory education. Under the "İlköğretim Okulu" act, compulsory education lasts eight years and includes children and adolescents aged from 6 to 14 years. The compulsory school is a uniform structure in which the primary and lower secondary school is not formally separated [29].

In Poland, during the research, the compulsory school system included a 6-year primary school and a 3-year junior high school. The research covered pupils from the first class of junior high school [28].

The inclusion criterion for both Polish and Turkish youth was their calendar age.

For a more complete characterization of the subjects, measurements were made:

- body height with anthropometric accurate to 0.1 cm,
- body weight with an electronic medical scale accurate to 0.1 kg.
- Waist and hip circumferences with an accuracy of 0.5 cm.

On the basis of the obtained data, the relative body mass index (BMI), as well as adiposity and fat tissue distribution: Waist to Hip Ratio (WHR), Waist to Height Ratio (WHtR) were calculated. The characteristics of the subjects are presented in tab.1.

**Tab. 1.** Examined characteristics

Variables	Polish youth		Turkish youth		Absolute difference	Relative difference
	x	S	X	S		
Body weight [kg]	60,69	12,61	62,83	8,48	-2,14	-3,40
Body height [m]	170,19	8,80	169,08	7,70	1,11	0,65
BMI	20,88	3,77	21,91	2,04	-1,03	-4,71
WHR	0,88	0,06	0,82	0,09	0,06	7,39
WHtR	0,45	0,06	0,43	0,05	0,02	4,33

BMI - body mass index, WHR - Waist to Hip Ratio, WHtR - Waist to Height Ratio.

Readiness for regular physical activity was assessed with a special algorithm in accordance with the concept of the transtheoretical model

(TM). The TM indicates changes in behaviour at various stages, the presence of which is determined by other variables, with each factor

requiring involvement to a different degree. It is also referred to as a model of motivational readiness for physical activity, physical exercise / physical activity or a model of change stages [3,21,26].

In this work we adopted the interpretation of the model using the concepts, making it possible to present the type of distance that a person has to overcome in order to achieve the target of behaviour referred to as regular physical activity at the recommended intensity and frequency. These are intentional behaviours, which are the stage of change, the stage of readiness to change, and motivational readiness for physical activity. The authors [3,5,26] distinguish five stages:

1. Precontemplation (Not Ready) – this is the stage in which the person is not physically active and does not intend to be so in the next semester. This state is a consequence of not being informed about the effects of a passive lifestyle or of a negative memory of this activity.
2. Contemplation (Preparing) – a person is not physically active, but intends to change his or her lifestyle in half a year. This is an intentional stage. These are only thoughts about physical activity.
3. Preparation (Ready) – a stage during which irregular, sporadic and less than recommended physical activity occurs or the specific purpose of activity is being specified.
4. Action – physical activity is regular, but it lasts less than 6 months, it is possible that it will stop in the future. This stage includes people who are physically active, beginners.
5. Maintenance – a person is regularly physically active for more than half a year, which means that the probability of resignation is lower.

The task of the respondents was to assess which of the five statements proposed best describes their readiness for regular physical activity. The result is the assignment of the

subject to one of five stages corresponding to readiness to undertake physical activity.

To determine the level of physical fitness, the European Fitness Test – Eurofit [9] was applied. The following tests were carried out: body balance, speed of hand movements, flexibility, explosive strength, static force, functional strength, running speed, cardiopulmonary endurance.

Obtained results of investigations were developed by calculating basic statistical measures. To assess the normality of data distributions, the Shapiro-Wilk test was used to determine the homogeneity of variance of the Levene test. To determine the significance of differences in mean values, analysis of ANOVA in multiple classifications was used, and to show relationships between variables Pearson's correlation test was applied.

## Results

Statistical analysis of the somatic parameters of the subjects showed no statistically significant difference between the groups, taking into account body weight ( $t=-1,19$ ;  $p<0,24$ ), body height ( $t=0,76$ ;  $p<0,45$ ) and WHtR ( $t=1,87$ ;  $p<0,06$ ). Statistically significant differences were found in BMI ( $t=-2,10$ ;  $p<0,04$ ) and WHR ( $t=4,16$ ;  $p<0,01$ ).

The analysis of the level of physical fitness of subjects from Poland and Turkey showed statistically significant differences. Of the 8 tests carried out, in six - a larger level was obtained by respondents from Poland and in five of them these were statistically significant differences. In 2 of the conducted tests, the youth from Turkey reached an average higher level (total body balance, flexibility), but these were statistically insignificant differences. The greatest relative differences were observed in the level of functional strength (81,47%) and endurance (48,40%). The smallest in the level of flexibility (3,19%). (Tab.2).

**Tab. 2.** The results obtained by the subjects in individual tests

Variables	Polish youth		Turkish youth		Absolute difference	Relative difference	t - tests
	x	s	X	S	X1-X2	X1-X2(%)	p
Total body balance	1,40	0,82	1,45	0,80	-0,05	-3,33	0,74
Speed of hand movements	11,24	1,65	12,20	1,54	-0,96	-7,86	0,01
Flexibility	8,48	4,96	8,76	6,18	-0,28	-3,19	0,79
Explosive Strength	191,96	30,28	183,03	30,45	8,93	4,88	0,10
Static force	24,55	6,92	19,85	5,75	4,70	23,68	0,00
Functional strength	28,80	21,47	15,87	11,82	12,93	81,47	0,01
Running speed	19,84	2,67	20,73	1,64	-0,89	-4,31	0,00
Cardio-respiratory endurance	9,28	2,38	6,25	1,43	3,03	48,40	0,00
Stages of readiness to undertake physical activity	4,00	1,34	3,35	1,07	0,65	19,40	0,00

p – probability in t-tests

The correlation coefficient between the stages of readiness to undertake physical activity and physical fitness tests (Tab. 3) was calculated for the main purpose of the work. Only in one case was there a clear relationship. It occurred in

Turkish youth between the stages of readiness to undertake physical activity and the level of endurance. In other cases, these were low dependencies.

**Tab. 3.** Correlation between readiness to undertake physical activity and physical fitness tests.

Variables	Polish youth	Turkish youth
Total body balance	0,02	-0,02
Speed of hand movements	-0,10	-0,05
Flexibility	0,12	0,12
Explosive Strength	0,00	0,16
Static force	-0,04	0,06
Functional strength	0,02	0,04
Running speed	-0,08	-0,21
Cardio-respiratory endurance	-0,05	0,36

## Discussion

For a number of years studies have been conducted to assess the level of physical fitness of children and adolescents using a variety of

research tools. The European Physical Fitness Test applied in the work allows for a comprehensive assessment of the components of physical fitness, assesses the basic areas of human mobility and creates the opportunity to

compare the results obtained by different populations.

The work presents the results of research on one age group and for this reason they are the pilot. On the basis of the conducted research it was found that the level of the majority of the parameters examined is higher in Polish schoolchildren. Based on the available literature, it can be assumed that the level of physical fitness presented by the pupils of the schools studied is directly proportional to the organizational and technical possibilities in which physical education classes take place as well as the way of spending free time [18, 25].

The educational environment plays a particularly important role in this context as children engage in physical activity and sports at school. Thus, schools and teachers facilitate the physical activity of children, as do educators in early childhood education and child care facilities and sports clubs. Modern social reforms, created in many countries, perceive the dissemination of physical activity as an important element of national health promotion programs. This is a consequence of the state of knowledge about the importance of physical activity in health prophylaxis. Physical activity of a given community depends on "socio-economic status and income inequality", which include education, amount of earnings and type of work performed. It was found that less wealthy people less often use sports and recreational infrastructure [27].

In the case of children, the role of parents, the family as well as the wider community is also important. Numerous studies concern the influence of the family. Some authors believe that shaping a child's personality depends on genes, and peers influence other factors [31]. Most, however, say that the family is the foundation of the child's socialization for physical activity. The family shapes attitudes and behaviors regarding physical activity [4, 23, 24].

The EU guidelines on physical activity [12] have emphasized that in recent years, everyday habits of children have changed due to the emergence of new models of spending free time (television, internet, video games, smartphones, etc.) and that this leads to reduced physical activity. This tendency can be explained also by time constraints, social and budgetary

constraints, changes in lifestyle or the lack of proper sports infrastructure. The EU guidelines highlighted serious concerns that physical activity among children and adolescents was supplanted by more static activities [8].

Despite the general propensity of children to be physically active, their physical activity has decreased over the past 20 years. This change has coincided with increasing rates of childhood weight issues and obesity and health problems or physical disabilities such as musculoskeletal disorders. According to estimates from the WHO's Childhood Obesity Surveillance Initiative (COSI), around 1 in 3 children in the EU aged 6-9 were overweight or obese in 2010. This is a worrying increase since 2008, when the estimates were 1 in 4 [11].

Physical activity and cardio-respiratory fitness are widely recognized as factors in the prevention of diseases related to obesity, type 2 diabetes and cardiovascular diseases. It was found that racial and ethnic differences are factors affecting the frequency of their occurrence. National minorities are more at risk of civilizational diseases than white Americans. The difference is particularly visible between black and white adults [6]. Most research on race and ethnic differences in fitness and activity among teenagers indicates that minorities are less active and physically fit than their white peers. However, the results are not unequivocal due to the methodological diversity of the studies [15,16,19].

Reduced physical activity of children and adolescents is manifested by reduced efficiency and exercise capacity. In many scientific publications, insufficient physical activity among children and adolescents is found, regardless of where they live in the world [7,30].

Acquiring competence in the area of physical culture depends on the intentions of physical activity, as well as affecting emotional health, which includes self-esteem [2,13]. Research shows that a sense of self-efficacy has a great effect on physical activity and this depends on how you spend your free time. People with this attribute are more physically active. Self-efficacy not only enables the maintaining of the recommended physical activity, but also prevents its reduction [10].

The transtheoretical model (TM) indicates changes in behavior at various stages, the presence of which is determined by other variables, and each factor requires involvement to a different degree. It is also referred to as a model of motivational readiness stages for physical activity, physical exercise / physical activity or a model of change stages [3,21,26].

Comparing school-age youth from Poland, Hungary, Turkey and the USA in terms of the social and cognitive determinants of physical activity, it can be noticed that among Polish youth, statistically significant factors include: self-efficacy ( $\beta=0,18$ ), gender ( $\beta=0,17$ ), age ( $\beta=0,12$ ), future orientation ( $\beta=0,15$ ), social orientation ( $\beta=0,08$ ) and physical activity of peers ( $\beta=0,28$ ) [20].

Research suggests that Turkish children and young people have too few physical activities in educational institutions and in order to encourage their participation in recreational activities in their spare time, it would be necessary to increase the number of physical education lessons [1]. Young Turkish people spend their free time passively and only occasionally play soccer [14].

Research shows that the way of spending leisure time among young people in Turkey depends on the gender and type of school ( $p<0,05$ ) [32]. Intercultural studies with the trans-contextual model test indicate that the strongest relationships among Polish youth occur between behavioral intentions and behaviors ( $\beta=0,78$ ), attitude and behavioral intentions ( $\beta=0,47$ ) and an index of relative autonomy in free time and behavioral attitude ( $\beta=0,59$ ) [17].

The research by Sasa-Nowosielski [27] confirms the thesis that a person's behavior is greatly influenced by the belief that he or she will meet the challenges. The relationships between predisposing variables were analyzed. It turned out that both variables: perceived sports competencies and self-efficacy determine to a significant extent the attitude of the respondents towards physical activity. Young people are happy to participate in physical activities that bring pleasure and are associated with something positive. An important motivating factor for the motor activities of younger subjects was the belief in their own sporting competences. On the other hand, older people were more concerned about their self-efficacy in dealing with activity barriers [27].

Studies of Turkish students indicate that the majority of young people define their attitude to physical activity as a contemplative stage (31.4%), the second position is occupied by the preparatory stage (25.3%). The activity stage is chosen only by 7.5% of the respondents. Every fifth student determines his behavior as a continuation. The student's place of residence did not affect the indicated stage: university campus, or other place [33].

## Conclusions

On the basis of the research conducted, it was found that the studied group of young Polish people was characterized by a higher level of physical fitness than their peers in Turkey. There was no significant relationship between the stages of readiness to undertake physical activity and the results of fitness tests. The need for further research was concluded.

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