



CAN POLISH UNIVERSITY FEMALE STUDENTS SWIM?

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Annotation. *Background and aim of the work:* There are only few studies in Polish and foreign literature providing solid information on swimming skills of university students. The aim of the study carried out at the University of Warmia & Mazury in Olsztyn was to determine swimming skills of Polish university female students starting their studies. *Material and methods:* The study was conducted in 2012 on 298 female students of the 1st year course, at the age of 19 – 20. Anonymous questionnaire was used in the research. *Results:* It has been shown that almost 72% of the women could not swim at all, and 26% swam poorly. Within the group of women able to swim, the greatest percentage was set by women using classical style (49%) and “their own” one (27%) and only 13% of the students used crawl, 9% - back stroke and 2% - butterfly style. Of all the women declaring swimming abilities, the biggest percentage (16%) could cover the distance of only 20 – 50 m; fewer students (6%) covered the distance of 50 – 100 m; and 5% could swim only 20 m. Only a marginal number of students (2%) could cover the distance from 100 to 1000 m; none could swim more than 1000 m. *Conclusions:* The study showed a very pessimistic picture of swimming skills of Polish university female students in respect of the number of women able to swim, their knowledge of swimming styles, and the length of the covered distance.

Key words: Polish, university, female students, swimming skills, styles, distances.

Introduction

Generally, swimming is considered to be a very attractive form of physical activity among people of various ages. Research has also indicated many pro-health aspects of this activity, numerous advantages of which within the field of recreational use of aquatic environment and its positive influence on physical and emotional well-being as well as social sphere have been well documented.

Regular activity in water environment improves general efficiency of human body by activation of circular-respiratory system. In addition, performing 2.5-hour aerobic effort per week in the form of swimming significantly decreases the risk of chronic disease. As a result, people who can swim are characterized by half-lower risk of death in comparison to physically inactive ones (Chase, Sui & Blair, 2008). Beneficial influence on health status of people suffering from diabetes and heart diseases has been also shown (USDHHS, 2008). Due to great draught and water density, a human body immersed in water seemingly loses its body mass and this relief gives an opportunity to be active to obese people, people with movement dysfunctions and/or suffering from various locomotion diseases (Gwinup, 1987). Hydrotherapy exercises are often the only form of physical activity for people suffering from arthritis, osteoarthritis and osteoporosis.

Swimming involves almost all muscles of motor system and apparent loss of body mass in water contributes to improvement of nerve and muscle coordination due to considerable muscle relaxation (Westby, 2001; Hall, Skevington, Maddison, & Chapman, 1996; Bartles et al., 2007). Such people can exercise longer in water than on land without greater burdening motor system and accompanying muscles with pain present during exercise (Broman et al., 2006; Cider, Svealv, Tang, Schaufelberger, & Anderson, 2006). Positive influence of swimming on human emotional well-being has been shown in the studies by Berger & Owen (1992). Therapeutic exercises performed in warm water decrease anxiety and depression, and improve the mood of people with fibromyalgia (Tomas-Carus, Gusi, Hakkinen, Leal, & Ortega-Alonso, 2008; Gowans & de Hueck, 2007). Due to its relaxation properties, bathing in warm water is generally advisable for pregnant women, immediately before and sometimes also during the labour (Hartmann & Bung, 1999).

Swimming is an important skill in human life. Already in ancient times Greeks and Romans attached great importance to this skill (Laughlin & Delves, 2004). Swimming skill may rescue somebody's life. Positive aspects of swimming can be also shown by parents taking care of children with mental and motor underdevelopment. In such cases recreation exercises in water improve family bonds and relations between family members (Mactavish & Schleien, 2004). Water therapy improves quality of life of old people by diminishing the level of their disability (Sato, Kaned, Wakabayashi, & Nomura, 2007) and of women in postmenopausal period or suffering from osteoporosis (Rotstein, Harush, & Vaisman, 2008).

Interesting information on the influence of swimming on human organism was obtained during the studies on sports athletes. Gwinup (1987) and Jang et al. (1987) found that swimmers are characterized by higher level of fat tissue (12% - men and 20% - women) in comparison to runners (7% - men and 15% - women) who spend similar amount of energy (daily demand respectively: 3380 kcal and 3460 kcal for swimmers and runners and 2490 kcal and 2040 kcal for

woman swimmers and runners). Similar energy expenditure spent during swimming and running has been confirmed by Flynn et al. (1990) in their studies during 45 min swimming and running training with 75-80% VO_{2max} intensity. These results were surprising as the best swimmers usually cross daily distances of 4 000 – 20 000 m. In consequence, false opinions were formed that swimming has little influence on body mass loss. Experts emphasize that this might be caused by a much bigger feeling of hunger experienced by swimmers than runners. Moreover, it has been noticed that between the swimming trainings (free time) swimmers are much less active in respect of movement, in comparison to runners (Jang et al., 1987). Also temperature of the environment affects strongly energetic balance of human body, for instance people taking 45 min of swimming in cold water (20°C) burnt 44% more calories (about 877 kcal) than people training in neutral water (30°C) that is usually found/held at swimming-pools (White, Dressendorfer, Holland, McCoy, & Ferguson, 2005).

The above presented arguments indicate explicitly that healthy swimming training may be an effective way to bring benefits in the form of improving one's good frame of mind, health and quality of life. Such was the cause of starting the presented studies on swimming skills of female students of the University of Warmia and Mazury in Olsztyn.

Aim of the study

The aim of the study was to assess swimming skills of female students beginning their studies at the University of Warmia and Mazury in Olsztyn (UWM). The following research problems were formed:

1. Can 1st year female students swim?
2. What is the level of their swimming skills in respect of the number of styles they know and the length of covered distance?

Materials and Methods

Ethics

The research was carried out with prior consent from the Ethical Committee of UWM, and the volunteers willingly agreed to participate in the study, which they confirmed by signing a written statement.

Participants

The research was conducted in the summer semester of the 2011/2012 academic year on 1st year female students enrolled at the UWM. Twenty groups of students totaling 298 women were chosen using random selection tables (Zieliński & Zieliński, 2001) from a total of 250 groups attending P.E. lessons. The participants were students of various faculties and constituted over 96% of females aged 19-20 in the selected groups. This amount was determined on the basis of the technical possibilities of surveying the study participants during a single week. Only those students who, for some reason, were absent on the day of the studies were excluded from the research. First year female students were specifically chosen because they are a particularly valuable research group, as it is still possible to shape and alter their motor habits. As females constitute over 70% of the total number of UWM students, they were naturally selected as the research group. Moreover, this study constitutes the fifth stage of cross-sectional studies on public health and motor performance, which have been conducted biannually since 2000 (Podstawski, 2006, 2012). The vast majority of students were permanent residents of the Warmia and Mazury voivodeship. We also assessed whether the number of participants is sufficient and therefore, if the group can be considered as representative. The following formula was used for this purpose (1):

$$n = \frac{\mu_{\alpha}^2}{4d^2}, \quad (1)$$

Where:

d – maximum (acceptable) estimation error. μ_{α} – value read from the normal distribution table $N(0.1)$ at the accepted significance level of $1 - \alpha$. For the accepted level of significance $1 - \alpha = 0.90$ ($\mu_{\alpha} = 1.64$). It was assumed that the estimation error does not exceed 5% (Nowak, 2002). The necessary number of participants was established as 269 and therefore lower than the actual number accounted for in the studies (298). That is why the study group can be considered homogenous and representative for the population of 1st year female UWM students.

Self-administered questionnaire

The anonymous questionnaire consisted of 3 closed-ended questions dealt with the following issues: the level of swimming skills, knowledge of swimming styles, and the length of distance [m] crossed over.

Statistical analysis

The analysis of results used descriptive statistics and statistical calculations were performed with using the Statistica PL v. 10 software package (Stanisz, 2008).

Results

Responses of the female students on their swimming abilities are presented in table 1. The majority of them (71.71%) could not swim at all and the percentage of women swimming poorly amounted to 25.93%. Only few students swam well and very well (2.02% and 0.34%, respectively). In the group of women knowing how to swim, the biggest percent was formed by the students using classical style (49.04%) and, so called “their own style” (26.92%), and

percent of women swimming the crawl, the backstroke and the butterfly stroke was very low (13.46%, 8.65 %, and 1.92%, respectively).

Table 1. Female students' responses to the questions on their swimming skills.

Subjective opinion on their own swimming skill											
I cant		Poor		Well		Perfectly		Total			
N	%	N	%	N	%	N	%	N	%	N	%
214	71.71	77	25.93	6	2.02	1	0.34	298		100	
Style used											
Crawl		Butterfly		Back		Classic		"Own"		Total*	
N	%	N	%	N	%	N	%	N	%	N	%
14	13.46	2	1.92	9	8.65	51	49.04	28	26.92	104	100
Maximal distance crossed over											
Distance length [m]				N				%			
0				213				71.48			
<20				15				5.03			
20 - 50				47				15.77			
50 - 100				18				6.04			
100 - 1000				5				1.68			
1000 < m				0				0			
Total				298				100			

Commentary: N – number of responses, % - percentage share, * - respondents could impart several answers.

To determine precisely the female students' swimming abilities mean distance which they could cover was measured. The greatest percentage of students declaring swimming skill could cover only 20 - 50 m (15.77%), much fewer women could swim the distance of 50 - 100 m (6.04%) and distance shorter than 20 m (5.03%). Only few women could swim from 100 to 1000 m (1.68% altogether); nobody could cover more than 1000 m (Tab. 1).

Discussion

Swimming belongs to those forms of physical activity that may be performed throughout the whole life. Practicing an adequate dose of exercises has become especially important nowadays, because due to evolution of civilization and technology, human beings experience more and more reduction of physical activity called hypokines. As a result of lack of biologically programmed daily movement dose, there appeared a great number of so called civilization diseases affecting cardiovascular system and movement organs as well as causing overweight and obesity, psychic disorders and neurosis (Church, Earnest, Skinner, & Blair, 2007). Poland presents an example of the nation of half a million of morbidly obese inhabitants (Starosta, 2010).

In 2006 about 339 million of visits by people over 6 have been noted at almost 9 million of private and public swimming-pools in the USA (Hubbard, 2009a). Swimming is the second most popular form of physical activity in that country (USCB, 2011), and a great part of people prefer exercise in water than on land (Lotsaw, Thompson, Sadowski, Hart, & Millard, 2007). In the USA about 41% of children of 7 – 17 and 17.4% of adults visit swimming-pools 6 times a year (USCB, 2011). Popularity of swimming is an effect of not only a great number of swimming-pools, but also a broad range of national programmes activating use of water of oceans, seas, lakes, basins and Spa for economic, recreational and pro-health purposes (Aquiló, Alegre, & Sard, 2005). For that reason introducing attractive programmes of using water reservoirs would considerably influence the stagnation status of Polish society.

Japan is a good example of a good swimming promotion (*Recreation in Japan*, 2008). Almost every school has an open-air swimming-pool and swimming lessons have been included into teaching programmes of the primary school. Parents have been actively engaged into teaching process of swimming; they are obliged by the government to carry special swimming cards containing additional information on the child health status (e.g. body temperature). Japanese high school students must know how to swim and those who do not meet the time limits take part in summer training camps. Such actions force children and adults to lead active life style which gradually transforms into a habit.

Despite easier and wider access of Poles to swimming-pools, the swimming skills of Polish women are still poor (Chodoła, 2009). The earlier observations have been confirmed by our studies on young women starting university studies. One of the reasons is very low level of Polish female students' activity, usually limited to participation only in obligatory exercises organized at university (Podstawski 2006, 2012; Lisicki, 2006). The presented here results are valuable information and comparative material for studies carried out in other countries. Within the last decade no publications on swimming skills of women starting their university studies have been shown.

Conclusions

The study showed a grim picture of Polish female students' swimming skills. Most women could not swim at all and about 25% swam poorly. Within the group of students knowing how to swim, the greatest part swam the classical or "their own" style. Experiments showed that among the students declaring swimming skills the greatest percent could cover over only the distance of 20 - 50 m, and some - 50 - 100 m. Only few students could swim from 100 to 1000 m and not a single woman could swim more than 1000 m. The study should be continued and the analyzed material should be widened to comprise all the voivodeships and include some environmental factors, such as: sex, age,

and place of permanent residence or parents' educational background. Deeper analysis of this negative phenomenon would better diagnose causes of its existence.

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Cite this article as: Podstawski Robert, Boraczyńska Sandra, Skibniewska Krystyna, Kolankowska Ewelina. Can polish university female students swim?. *Pedagogics, psychology, medical-biological problems of physical training and sports*, 2013, vol.6, pp. 69-73. doi:10.6084/m9.figshare.715688

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Received: 28.04.2013
Published: 30.06.2013