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among people realising fitness
activities on regular basis**

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Tekst jest udostępniony do wykorzystania w ramach
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**ANALYSIS OF MOTOR ABILITIES' PROGRESS AMONG
PEOPLE REALISING FITNESS ACTIVITIES
ON REGULAR BASIS**

Introduction

To maintain harmonious psychomotor development everyone needs a certain level of physical strain, which can be reached through various forms of activity. The main factor determining human motor development is his or her environment which influences morphofunctional and psychophysical changes throughout entire life as a natural stimulant. Therefore, physical activity stimulates development processes while being invoked by different states of one's organism [Malinowski, 1985]. Nowadays, active leisure becomes more and more important as it prevents many negative effects urbanisation has on people's lives. It balances the monotony of their work, inspires various changes in their personality, relieves their stress. The World Health Organisation and other influential organisations have appealed for increasing everyday physical activity for years. At the same time they recommend it, next to proper diet, as a primary factor increasing the possibility of living a healthy life [*American Heart...*, 1990]. Increasing physical activity of a whole society is one of the most important aims of modern public health strategies [Kuński, 2003]. One of

the more attractive and more appreciated recreation forms nowadays is fitness. The way to realise fitness physical activity is to undergo a complete training containing endurance, aerobic, strength, coordination, and relaxation exercises, complemented with accurate diet and hygienic lifestyle [Wolańska, 1988].

1. Aim

The aim of this work is to determine the way a recreational fitness training programmed by the subjects according to their own needs, abilities, and expectations, influences chosen motor features.

2. Sample Group Characteristics

The research was done on a sample of 18 women and 10 men chosen among volunteered. They were not chosen at random and the deciding factor was the fact they were just starting their training. The chosen subjects had valid medical certificates, allowing them to undergo the tests, and their written consent.

In the sample group of women the average age was 23.3 ± 4.5 . In the initial stage of the experiment its average body mass was 61.4 ± 8.9 kg. Its body fat factor (FAT[%]) was 25.7 ± 4.8 %. Average fat amount (FAT [kg]) was 16.2 ± 5.3 kg and non-fat body mass (FFM [kg]) was 45.2 ± 4.1 kg. Other anthropometric parameters of the women group at the beginning of the experiment are presented in the table 1.

Table 1

Anthropometric Parameters of the Women Group

Women		Age (years)	Height (cm)	Body mass (kg)	FAT (%)	FAT (kg)	FFM (kg)	BMI	BSA
n = 18	x	23.3	167.1	61.4	25.7	16.2	45.2	21.9	1.0
	SD	4.5	6.3	8.9	4.8	5.3	4.1	2.4	0.1
	min	17.2	155.0	48.5	18.2	9.2	39.1	18.2	1.4
	max	32.9	183.0	85.0	34.1	28.2	56.8	27.6	2.1
n – number of subjects x – average, SD – standard deviation, FAT – fat amount, FFM – non-fat body mass, BMI – body mass index, BSA – body surface area									

Source: own research.

In the sample group of men the average age was 25.5 ± 1.82 . In the initial stage of the experiment its average body mass was 82.6 ± 8.4 kg. Its body fat factor (FAT[%]) was 18.3 ± 3.8 %. Average fat amount (FAT [kg]) was 15.4 ± 4.5 kg and non-fat body mass (FFM [kg]) was 67.2 ± 4.1 kg. Other anthropometric parameters of the women group at the beginning of the experiment are presented in the table 2.

Table 2

Anthropometric Parameters of the Men Group

Men		Age (years)	Height (cm)	Body mass (kg)	FAT (%)	FAT (kg)	FFM (kg)	BMI	BSA
	x	25.5	180.7	82.6	18.3	15.4	67.2	25.3	2.0
n = 10	SD	1.8	5.6	8.4	3.8	4.5	5.3	2.2	0.1
	min	22.8	172	66.0	11.9	7.9	58.1	21.3	1.8
	max	29.3	190	96.0	28.1	27.0	78.6	28.1	2.2
n – number of subjects x – average, SD – standard deviation, FAT – fat amount, FFM – non-fat body mass, BMI – body mass index, BSA – body surface area									

Source: own research.

The first test was commenced in the beginning of fitness training period. It was agreed that the training observation and all necessary tests were to last for ten months (from September to June). All subjects were either students or actively employed (8 students of AWFIS). During the periods free of work or studying they were spending their time actively on swimming, skiing, skating, or trekking. Some of the subjects (men) sporadically played football or basketball in non-organised groups. All subjects assumed they would realise their training of chosen fitness activity at least two times a week. Subjects programmed their activity according to their own needs, abilities, and preference. They were not limited to any time span, intensity, nor quality of their chosen exercise which is a tendency present in most Polish fitness clubs. Seven of the subjects (six women and one man) did not undergo the final physical efficiency tests due to not having fulfilled all requirements or for personal reasons.

3. Research Methods

At the beginning (BAD1) and at the end (BAD2) of the research basic anthropometric measurements including subjects' height and body mass were taken. Body composition elements were determined with the method of electric bioimpedance, by the use of Tanita Body FAT Monitor and Scale Analyser TBF300. Also, the Eurofit physical fitness test [Jagier, Kozdroń, 1977] was done twice – at the beginning of the training period (September) and after it ended (June). The motor skills results based on chosen tests of the Eurofit were used for a comparative statistical analysis, which was done using ANOVA variation analysis in STATISTICA 6 program.

4. Results

During the nine-month research period all trainings done within the sample group in one fitness club were recorded. All subjects programmed their physical activity according to their needs, abilities, and preference. They were not limited to any time span, intensity, nor quality of their chosen exercise. They assumed they would realise their training of chosen fitness activity at least two times a week. Among the chosen forms the biggest popularity was gained by the Dance group exercises (dancing aerobic forms), 216 hours. The second most often chosen fitness form was Fat Burner, 204 hours, and the third was Body Sculpt, 189 hours. Also Step, TBC, and Bodybuilding exercises turned out to be quite popular. The preferred fitness forms realised by the women sample group are shown in Fig. 1.

Among men, the most popular form was individual bodybuilding training realised on a gym, 465 hours. The second form in this respect was spinning, 159 hours, and the third was boxing-based exercise training (Tae Bo, Box Aerobic), 148 hours. The preferred fitness forms realised by the men sample group are shown in Fig. 2.

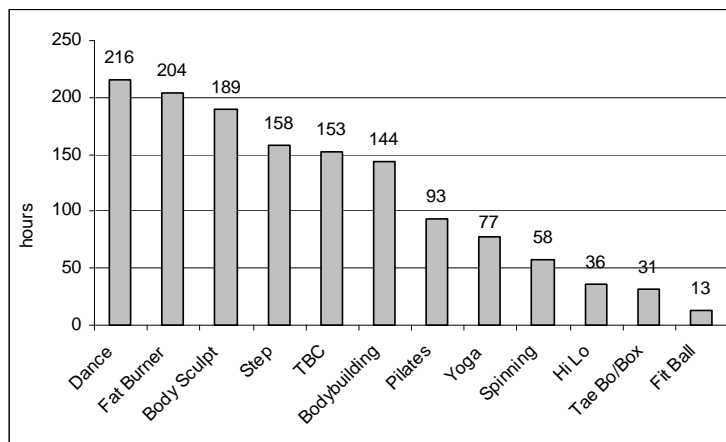


Fig. 1. Fitness forms realised by the women sample group

Source: own research.

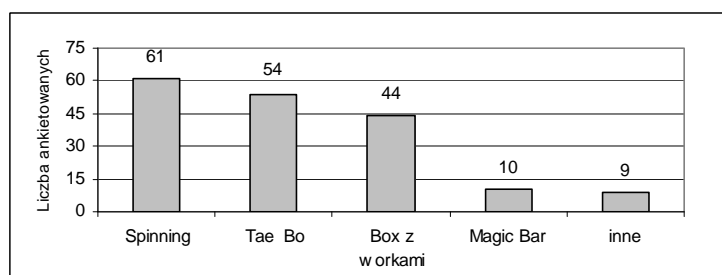


Fig. 2. Fitness forms realised by the men sample group

Source: own research.

After the results of the chosen fitness forms observation in the basic sample group it was stated that the form of exercise chosen most often was strength training, 609 realised hours. Those exercises were mostly chosen by men and were realised more regularly and frequently by men. The second place given these criteria was occupied by Dance exercises, 255 hours, which were realised mostly by the women group. The third and fourth places differed insignificantly and were reached by Spinning and Fat Burner, 217 and 205 hours respectively. Training forms realised by the basic sample group are shown in Fig. 3.

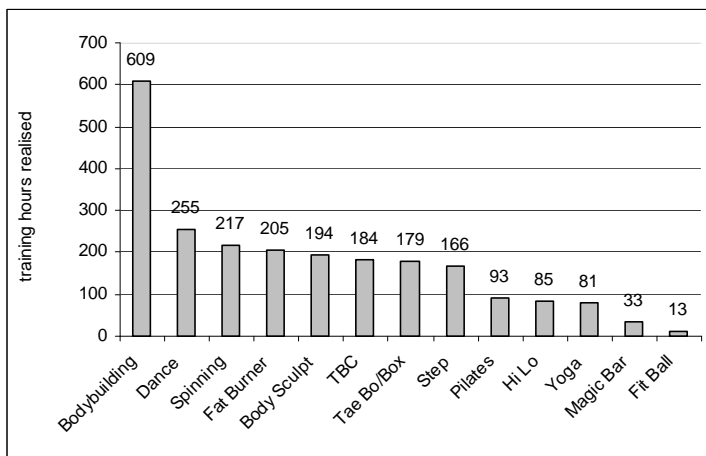


Fig. 3. Training forms realised by the basic sample group

Source: own research.

The motor skills results based on chosen tests of the Eurofit were used for a comparative statistical analysis, which was done using ANOVA variation analysis in STATISTICA 6 program (statistical relevance set to be $p < 0.05$). Comparison between the basic measurements characterising motor abilities within the sample group before the experiment (BAD1) and after ten months of fitness activity (BAD2) showed statistically relevant changes in most of the cases.

In the women group ($n = 18$) six out of seven compared values shown statistically relevant changes. The Women's Eurofit tests' analysis at the beginning and at the end of the experiment is shown in table 3.

Table 3

Women's Eurofit tests' analysis at the beginning and at the end of the experiment

Test Type	BAD1	BAD2	Function	Relevance
Body lifting while laying down	21.90	27.05	medium	Statistically Relevant
	16.00	23.00	min	
	28.00	31.00	max	
	3.85	2.68	standard deviation	
Sideward bending	40.08	42.80	medium	Statistically Relevant
	32.50	35.00	min	
	46.00	48.00	max	
	4.25	3.46	standard deviation	
Forward bending	8.93	12.45	medium	Statistically Relevant
	2.00	8.00	min	
	13.00	17.00	max	
	2.91	2.42	standard deviation	
Standing on one leg	1.00	1.00	medium	Statistically Irrelevant
	1.00	1.00	min	
	1.00	1.00	max	
	0.00	0.00	standard deviation	
Upward jump	45.60	49.25	medium	Statistically Relevant
	40.00	40.00	min	
	57.00	63.00	max	
	5.68	6.47	standard deviation	
Hanging down with arms bent	14.54	15.39	medium	Statistically Relevant
	2.00	5.00	min	
	57.00	56.00	max	
	13.09	12.54	standard deviation	
Tapping arm movement frequency	9.98	8.48	medium	Statistically Relevant
	8.14	7.01	min	
	12.41	10.21	max	
	1.06	0.95	standard deviation	

Source: own research.

Statistical irrelevance in case of the balance test (standing on one leg) was due to imprecise evaluation factors determined by its authors [Jagier, Kozdroń, 1997]. It was done by recording every instance of a subject supporting oneself when losing balance during two attempts, of which the worse was discarded. Nonetheless, a clear difference between consecutive tests was noticed as later they were done with more stability and less vertical deviation, although the official result remained unchanged. In the men group (n = 10) six out of seven

compared values showed statistically relevant changes. The balance test no relevant changes were recorded. As in case of the women group this was the result of the test being inaccurate. Similarly, in this group a clear difference between tests was noticed in the field of stability and vertical deviation, although the official result remained unchanged. Men's Eurofit tests' analysis at the beginning and at the end of the experiment is shown in table 4.

Table 4

Men's Eurofit tests' analysis at the beginning and at the end of the experiment

Test Type	BAD1	BAD2	Function	Relevance
Body lifting while laying down	22.00	28.90	medium	Statistically Relevant
	16.00	25.00	min	
	25.00	31.00	max	
	3.09	1.85	standard deviation	
Sideward bending	39.00	39.70	medium	Statistically Relevant
	32.00	34.00	min	
	47.00	48.00	max	
	4.22	4.19	standard deviation	
Forward bending	3.30	4.00	medium	Statistically Relevant
	1.00	2.00	min	
	7.00	7.53	max	
	1.95	1.85	standard deviation	
Standing on one leg	1.30	1.10	medium	Statistically Irrelevant
	1,00	1.00	min	
	2.00	2.00	max	
	0.8	0.32	standard deviation	
Upward jump	94.0	101.20	medium	Statistically Relevant
	80.00	85.00	min	
	110.00	120.00	max	
	9.69	12.09	standard deviation	
Hanging down with arms bent	65.31	92.89	medium	Statistically Relevant
	40.64	60.00	min	
	100.00	120.00	max	
	19.94	18,07	standard deviation	
Tapping arm movement frequency	10.06	9.11	medium	Statistically Relevant
	8.17	8.00	min	
	12.41	10.50	max	
	1.51	0.91	standard deviation	

Source: own research.

5. Conclusions

1. Fitness activity programmed with no restrictions and by the people taking part in it themselves, increased their overall motor abilities level.

2. Group exercises, based on choreographed movement, preferred among the women sample group increased their overall motor abilities level.

3. Strength training realized freely by the men sample group increased their chosen motor abilities level.

Summary

Physical activity is one of the most important factors in maintaining good health, mood, overall quality of life, and longevity. It's lack leads to increase in society's illness and mortality rate due to coronary heart disease, type II diabetes, and variety of tumours. Fitness has become one of the most popular activities nowadays. More and more do people realize their training guidelines through this mass recreation form. Fitness training is a conscious process that influences increase in psychomotor abilities without upsetting harmonious biological development of a subject. It complements the overall range of ones motor skills by organizing and setting the form, volume, and intensity of his or her physical activity.

Therefore, this work aims at examining the influence of systematic physical activity on motor skills. As expected, despite the freedom of choice concerning fitness form, the results confirmed statistically important differences in motor skill levels at the beginning and after ten months of systematic physical activity. Similar conclusions are also drawn by other specialists and presented in their works, confirming efficiency of fitness forms in developing motor abilities level [Pachucka, 2004; Wit at all 1995]. Health fitness training, when planned correctly and realized on a regular basis, not only enhances motor skills but also reduces the chance of heart disease [Kasch, 1999; Tanaka, 2000], helps in keeping stable blood pressure [Kokkinos, Papademetriou, 2000], helps in controlling body mass, improves lipid profile by decreasing cholesterol level, decreasing LDL and increasing HDL [Tolfrey, 2000], strengthens bone structure, prevents osteoporosis [Messieur, 2000], and reduces depression

susceptibility [Blumenthal, 2000; Goldsmith, 2000; Miszko, Cress, 2000; Paluska, Schwenk, 2000].

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ANALIZA ZMIENNOŚCI SPRAWNOŚCI MOTORYCZNEJ OSÓB SYSTEMATYCZNIE REALIZUJĄCYCH REKREACYJNĄ AKTYWNOŚĆ FITNESS

Streszczenie

Aktywność fizyczna należy do najważniejszych czynników wpływających na stan zdrowia, samopoczucie, jakość życia i długowieczność gatunku ludzkiego. Zbyt mała jest jedną z głównych przyczyn chorób i umieralności związanej z chorobą wieńcową, cukrzycą typu II oraz wieloma chorobami nowotworowymi. Jedną z popularniejszych form aktywności ruchowej w ostatnim czasie stał się fitness. Coraz więcej ludzi realizuje założenia treningu zdrowotnego poprzez uczestnictwo w tej masowej formie rekreacji ruchowej. Trening fitness to świadomy proces, który nie naruszając harmonijnego, biologicznego rozwoju człowieka, wpływa na podniesienie sprawności psychomotorycznej. Uzupełnia również zasób umiejętności ruchowych poprzez określoną co do formy, intensywności i objętości aktywność ruchową.

W związku z powyższym, w pracy postanowiono zbadać wpływ systematycznej aktywności fizycznej fitness na sprawność motoryczną. Zgodnie z oczekiwaniami, mimo dowolności w wyborze form fitness przez uczestników eksperymentu, wyniki potwierdziły istotnie statystycznie różnice w poziomie sprawności motorycznej przed i po dziesięciu miesiącach systematycznej aktywności fizycznej.

Tłumaczyła Izabela Drobnik-Kozakiewicz