ZDZISLAWA WYZNIKIEWICZ-KOPP
Higher Pedagogical College, Szczecin

ALOJZY OGINSKI
Physical Education Academy, Gdansk

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MANIFESTATION OF SPORT TALENT IN MOTORIC TESTING (LONGITUDINAL RESEARCH)

experiment / sport classes / track-and-field / fencing / physical fitness / testing / competitors / trainees

It was found that the most pronounced abilities in track-and-field athletes are speed, as measured by 50 m run, and strength, as measured by standing long jump, while in fencers it is flexibility, as measured by flexion of trunk. The best competitors were progressing much more in test scores than the rest of their group during four years of training and finally reached the best scores in their training group.

1. PROBLEM

Keeping in mind the interaction of genetic and environmental factors in preparing for sport achievement, in theory of sport we distinguish the features which are subjected to training – that is to say, are more flexible, and open to training, as well as the features which are not subjected to training, i.e. could be explained by genetic influence.

The features which are subjected to training include technique and tactics, features of form (endurance and strength), and some motor coordination features (although research in this field is still in its early stage). Under the influence of training the muscle mass increase, thus changing the shape of the body, but genetic factors as determiners of the type of constitution, limit the final training effects.

The features which are not subjected to training include all those which cannot be changed after the process of growth has ended, due to strong genetic influence, i.e. body height, length of particular body sections, as well as their proportions.

Preparation for sport achievement begins at a very early age. Through a selection process children with predisposition for exceptional constitution and abilities are selected. While individuals, who lack disposition for developing features necessary in a given sport discipline, cannot cope with growing training demands, on the other hand, gifted individuals, able to fulfill training and sports requirements, raise the level of sport training effectiveness. They also develop their own style of movement, and they force new techniques which favour sport results progress.

Development of features determining success in sport is the result of the reaction of organism to training. Two major research directions may be distinguished in literature connected with sport selection. The first is concerned with differentiation of features essential for achievement of sport success. They are defined on the basis of recognising the features which characterise a champion in a given sport discipline, i.e. by creating the so-called „models of champions". The other, closely connected with the first one is concerned with investigating the pace of development of the features necessary for sport success. The purpose of this paper is to check the pace of development of motoric features in competitors of certain sports quality.

2. MATERIAL AND PROCEDURES OF TESTING

In 1975, in one of the schools in Gdansk, sport groups (fifth grades) for fencing and track-and-field were created. Selection for these groups was carried out by coaches and consisted of selecting fitter children from four parallel classes in the school. The assessment of morphological, functional, and fitness characteristics of children was made. Besides, more important results in sport were noted. Due to the small number of sport groups participants, new groups were established every year between 1975–79 and included into the investigation. In this way, test results were collected for 40 participants in track-and-field, and 41 participants in fencing. Only few of them reached sport success at the champion level.

In this study the results of participants in International Physical Fitness Test within the first four years of training were analysed. The test consists of eight tasks: best arm grip, flexed arm hang, standing long jump, flexion of trunk, 50 m sprint, 1000 m run, sit ups and shuttle run. The athletes were tested twice a year altogether eight times. The group means as well as the results of best athletes were plotted for each task.

3. RESULTS AND DISCUSSION

The analysis of test results showed progress in all motoric features along with the growing age (11–15). The progress in particular test items is unequal for the two groups, as can be seen in different profiles of physical fitness for fencers and track-and-field athletes (fig. 1). The obtained profile differences evidence the differentiation of initial fitness level between the groups in certain test items, as well as the intentional influence through exercises toward development of certain features, realized in the process of four-year training in both groups.

The features of exceptional importance for sport success in the appropriate discipline are found in track-and-field sprint – speed (50 m run) and speed strength (standing long jump), and in fencing – flexibility. Participants distinguished in sport achievement were progressing much in these test items, and finally reached the best scores in their training groups. Individual progress of the

best competitors and the progress of the whole training group is shown in fig. 2–15.

3.1. Fencers

The results achieved by best fencers in 50 m sprint and in sit ups oscillate around arithmetic mean of the whole group (fig. 2 and 3). So, features assessed by these test items do not seem to be of greater importance for achievement in fencing. The noted deviations of best fencers' results from the developmental curve of these features in the whole group may be the evidence of greater reactivity of the organism of the competitiors to training stress.

The best fencers were characterised by higher results in shuttle run than the boys of the same age already in initial testing, and they preserved their positions in final testing (fig. 4).

In flexed arm hang (fig. 5) and in standing long jump (fig. 6) the best competitors made greatest progress, exceeding in the third year of training the average group level. The result of competitor MK is the only one to remain at average level.

The attention is called to the result of competitor J.R. He made a particularly big progress in features essential for fencing. Starting with a low level in standing long jump and an average level in flexion of trunk, after 4 years he reached the leading position in the group.

Special attention was given to trunk flexion, because fencers' result in this test item is exceptionally high — higher than the results of other different groups of sport participants we tested. The best competitors showed high results already in the initial testing. During four years of training they made greater progress than the remaining participants. Particularly big progress was noted in 1978, i.e. after the third year of training (fig. 7).

Variations in results of 1000 m run were interesting. Lack of progress in arithmetic means of the whole group, as well as in individual results of the best competitors, could suggest that fencing does not influence this form of physical fitness. On the other hand, high level of results of the best competitors in this test item prove that their high physical fitness helped them to endure training loads well, and so to reach progress in features essential for fencing.

3.2. Track-and-field athletes

In flexed arm hang (fig. 9) and in sit ups (fig. 10) the initial results of the best sprinters are below the group's arithmetic mean. In the course of four years of training they made progress, which allowed them to exceed slightly the average group level in these test items. In sit ups one of them exceeded the group arithmetic mean, and the other did not.

In standing long jump (fig. 11) the best sprinters reached much better results than the group in the initial testing (one about 10 cm, the other one more than 20 cm). The pace of growth of results was higher for them than for the other participants, which is proved by the increase of the difference between their results and the arithmetic mean of the group up to 35 cm and more.

Although one of the competitors was at the same level as the group in 50 m sprint (fig. 12), while the other one was above it, after a year of training the growth of results can already be observed, becoming steeper in the following years of training.

Contrary to this, the results of the best competitors in shuttle run hardly exceeded the group arithmetic mean (fig. 13). So, it could be concluded that the competitors tested improved the running speed along the straight line only, and were not able to show the speed in a run with a change of direction.

The best sprinters showed, in the first testing session, higher level of persistence as measured by 1000 m run than the group average.

CONCLUSION

The investigation was carried out during 4 years, from 1975–1979. On the basis of evaluation of coaches two groups of students, who were attending primary school in Gdansk (fifth classes), were chosen. Fencing group consisted of 41, and track-and-field group of 40 students. During 4 years they regularly trained the chosen sport, and were tested 2 times a year, altogether 8 time during the whole period.

In this paper the results of young fencers and track-and-field athletes in International physical fitness test were analysed. The test comprises 8 tasks: best arm grip, flexed arm hang, standing long jump, flexion of trunk, 50 m sprint, 1000 m run, sit ups and shuttle run. The analyses showed the increase of arithmetic means in all the tasks along with growth, though the progressing was unequal, depending on the sport in which young athletes were participating. Also, it was showed that the best fencers were progressing much faster than their group in flexion of trunk and standing long jump, while the best track-and-field athletes were progressing better than their group in standing long jump, 50 m run and 1000 m run.

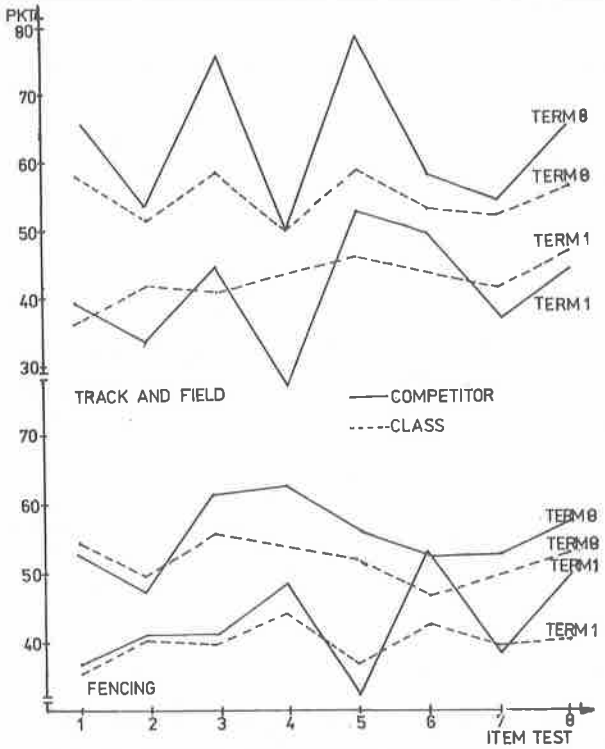


FIG.1 THE PHYSICAL FITNESS PROFILE OF THE BEST COMPETITORS ON THE BASIS OF THEIR CLASSES / THE 1 AND 8 TEST SESSION /

1. BEST ARM GRIP
2. FLEXED ARM HANG
3. STANDING LONG JUMP
4. FLEXION OF TRUNK
5. 50 m SPRINT
6. 1000 m .RUM
7. SIT UPS
8. SHUTTLE RUN

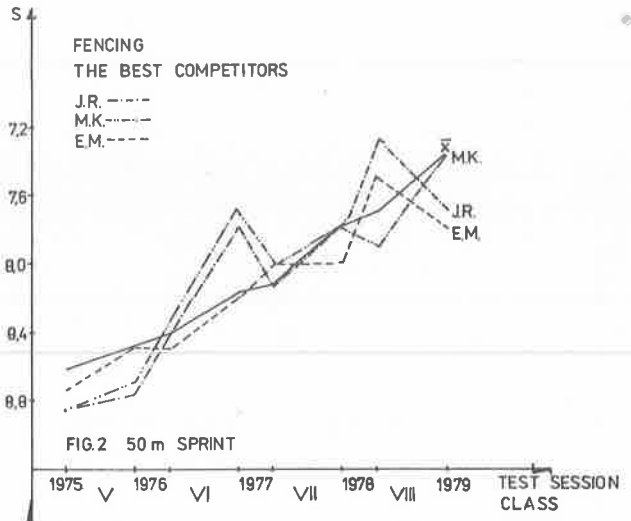


FIG.2 50 m SPRINT

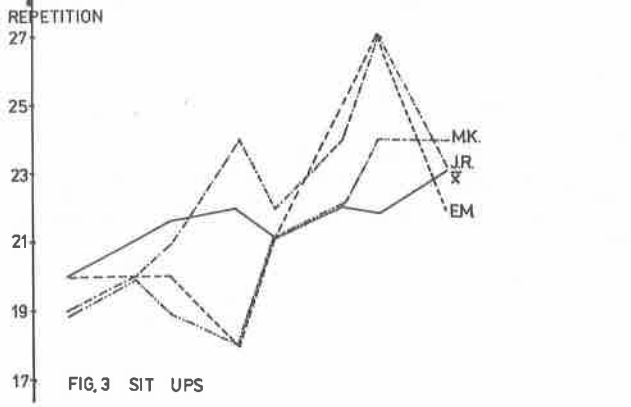


FIG.3 SIT UPS

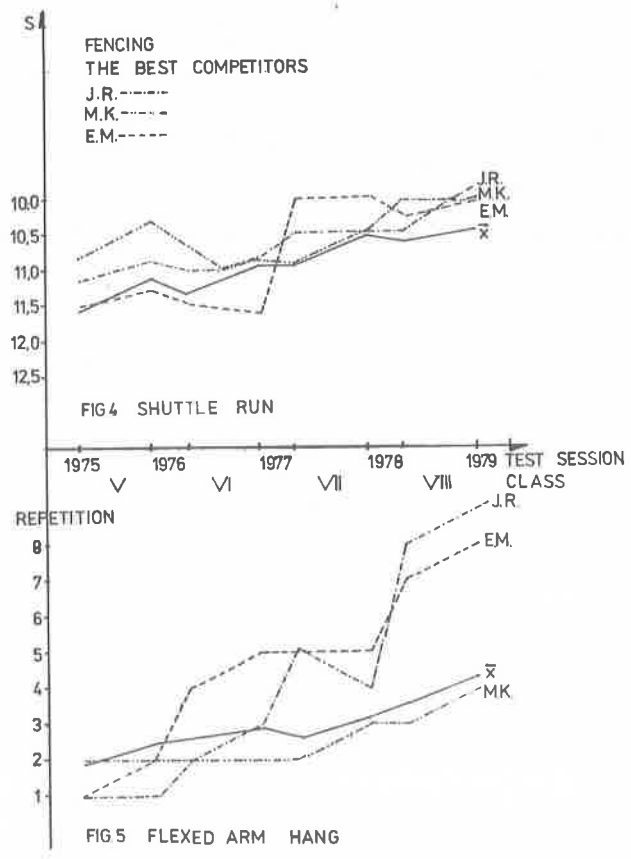


FIG.4 SHUTTLE RUN

FIG.5 FLEXED ARM HANG

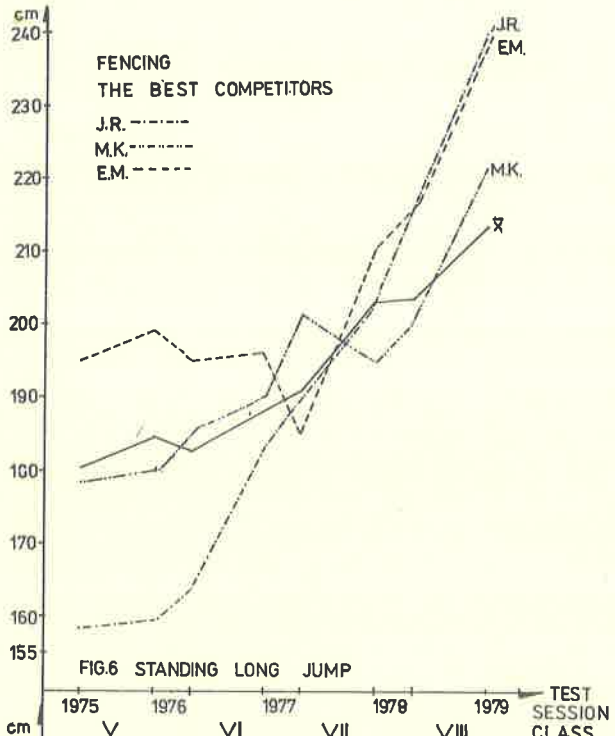


FIG.6 STANDING LONG JUMP

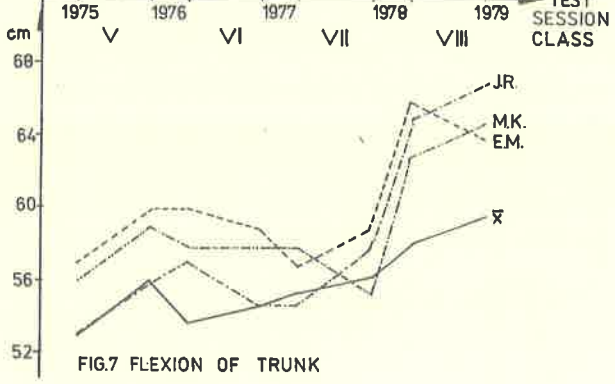


FIG.7 FLEXION OF TRUNK

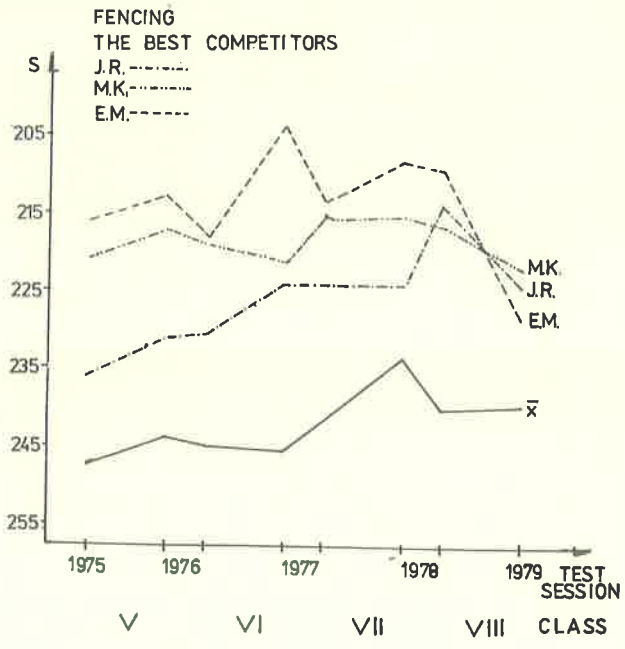


FIG.8 1000 m RUN

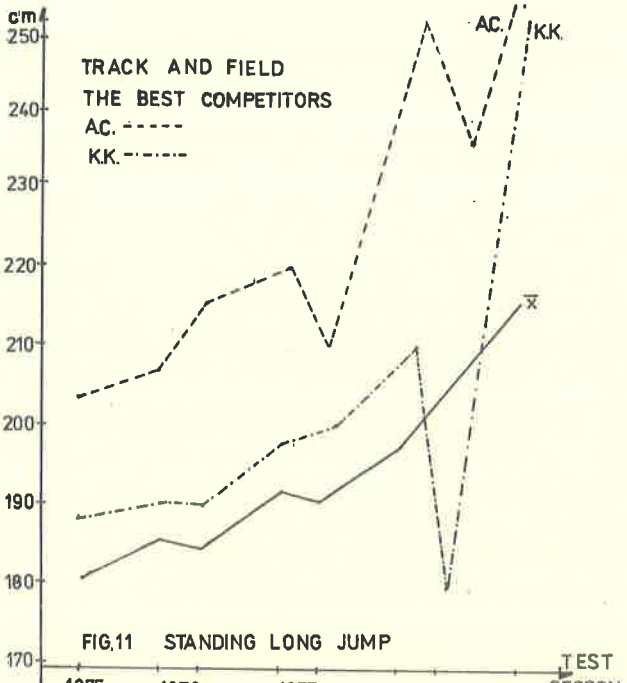


FIG.11 STANDING LONG JUMP

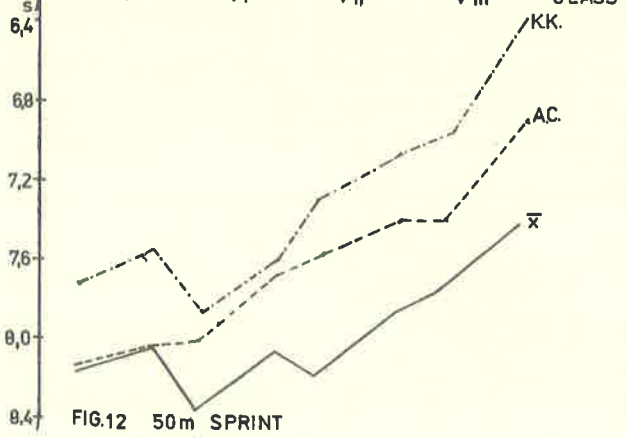
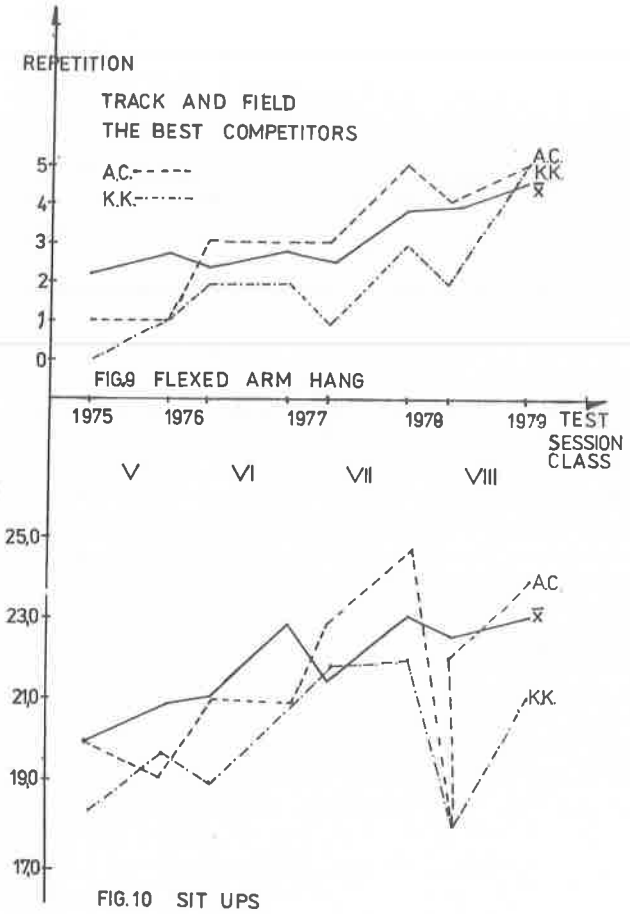
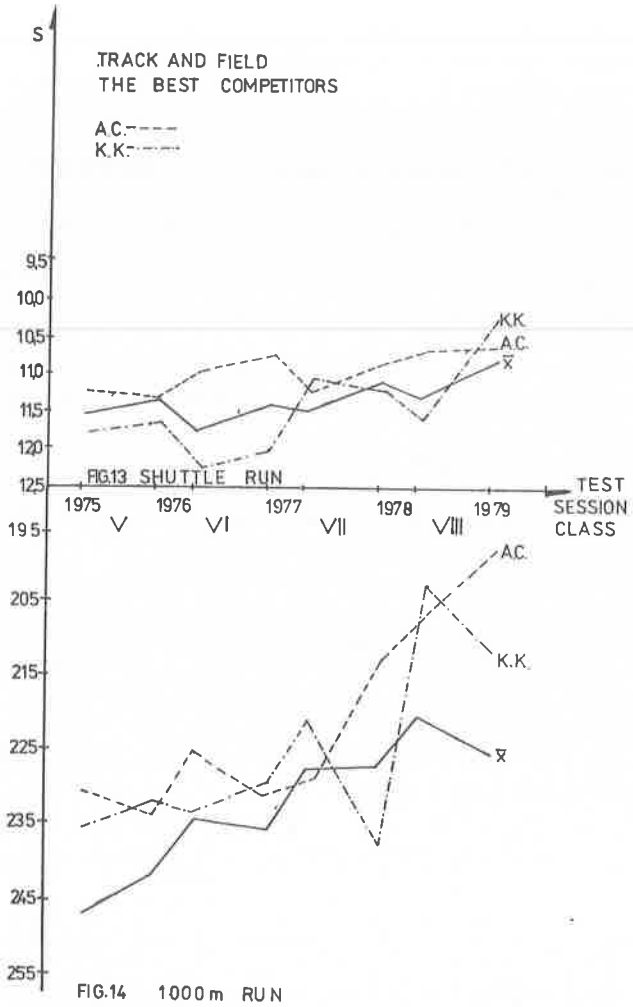


FIG.12 50m SPRINT





Zdzislawa Wyznikiewicz-Kopp
Viša pedagoška škola, Šćećin
Alojzy Oginski
Akademija za fizičku kulturu, Gdanjsk

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MANIFESTACIJA SPORTSKE NADARENOSTI U TESTIRANJU MOTORIKE (LONGITUDINALNO ISTRAŽIVANJE)

Istraživanje je provedeno u periodu od 1975–1979. godine na učenicima petih razreda osnovnih škola u Gdanjsku. Izabrane su dvije grupe učenika, jedna za mačevanje (41 učenik) i jedna za atletiku (40 učenika), na osnovu procjene trenera o njihovoj sposobnosti za određeni sport. Učenici su redovito trenirali sport za koji su bili izabrani, te su praćeni po dva puta godišnje, ukupno 8 puta kroz četiri godine.

U ovom radu analizirani su rezultati mladih mačevalaca i atletičara u Internacionalnom testu fizičkih sposobnosti, koji uključuje 8 zadataka (stisak šake dominantne ruke, vis u zgibu, skok u dalj s mjesta, savijanje trupa, trčanje 50 m, trčanje 1000 m, podizanje trupa iz ležanja i trčanje s promjenom pravca kretanja). Rezultati su pokazali porast aritmetičkih sredina u svim motoričkim testovima s porastom dobi, no napredak je bio nejednak, ovisno o sportu koji su učenici trenirali. Također se pokazalo da najuspješniji mačevaoci napreduju izrazito bolje od svoje grupe u visu u zgibu i skoku u dalj, a najuspješniji atletičari u skoku u dalj, trčanju na 50 m i trčanju na 1000 m.

Здислава Вызникиевич-Копп
Высшее педагогическое училище, Щецин
Алойзы Огински
Академия физической культуры, Гданьск

ПРОЯВЛЕНИЕ СПОРТИВНОЙ ОДАРЕННОСТИ В ИССЛЕДОВАНИИ МОТОРИКИ (ЛОНГИТУДИНАЛЬНОЕ ИССЛЕДОВАНИЕ)

Исследование проводилось в период 1975-1979 гг, а в качестве испытуемых приняли участие ученики, находившиеся в 1975 г в пятом классе начальной школы в Гданьске. Выбраны две группы учеников на основе предположения тренеров об одаренности учеников для определенного спорта. Одна из групп занималась фехтованием (41 ученик), а другая – легкой атлетикой (40 учеников). Ученики регулярно занимались спортом, который выбрали, а измерения проводились два раза в год, всего – восемь раз в течение четырех лет.

В настоящей работе проведен анализ результатов юных фехтовальщиков и легкоатлетов, достигнутых ими в Международном тесте физических способностей. Тест включает восемь отдельных заданий: сжатие кисти доминантной руки, вис в подтягивании, приыжок в длину с места, наклон туловища, бег на 50 м, бег на 1000 м, поднимание туловища из лежащего положения, бег с изменением направления движения. Результаты показывают, что с возрастом повышаются арифметические средние во всех заданиях, но степень повышения в отдельных заданиях зависит от вида спорта, которым ученики занимались. Кроме того было обнаружено, что лучшие фехтовальщики развиваются быстрее остальных учеников своей группы в висе в подтягивании и в прыжке в длину, а лучшие легкоатлеты в приыжке в длину, в беге на 50 м и в беге на 1000 м.