

## **SUMMARY**

### **The significance of somatic structure, motor fitness, and technical-tactical skills in the selection of 15-year-old female handball players for centralized training**

There is a lack of reports in the literature on assessing the tactical skills of female and male handball players, understood as their knowledge of game adaptation and decision-making on the field. This is an important issue because, as studies in other sports indicate, these skills can be important for identifying talent and assessing the athletic level of players in team games. As the literature review shows, there are considerable doubts about the choice and validity of using tests to assess the level of energy-based motor skills to identify athletic talent in team games. However, it seems that they should not be completely ignored in the selection process in handball, and especially when selecting players for specialized training. It should be noted that the correct course of sports selection is particularly dependent on the application of adequate criteria and standards. This is very important, for example, during the recruitment of players to sports championship schools, provincial cadres and the junior national team in handball - the first stages of selection for central training in our country.

The main objective of the study was to determine the importance of somatic constitution, motor skills and technical-tactical skills in the recruitment of handball players for central training at the stage of initial specialization. Additional objectives of the work are to evaluate the diagnostic value of the applied tests of motor effects for the identification of sports talents and control of training work in handball, to assess the usefulness of the test of knowledge and tactical skills in the recruitment of handball players for central training.

The study included 332. female handball players who began their education in the eighth grade of elementary school in September 2020. These players were students of elementary schools participating in the program of the Handball Training Centers of Poland. All handball players who underwent the sports training process within the OSPR were subject to an evaluation, which was carried out by team coaches and the program's provincial and regional coordinators. The evaluation consisted of the identification of the most talented players, and the OSPR database contains the coaches' written justification for each of the awarded players. In the analyzed vintage, a total of 62 "talented" female athletes in Poland were selected. All of them were included in measurements of somatic characteristics and physical fitness. Meanwhile, the TACSIS tactical knowledge test was conducted among 270 handball players -

including 57. from the "talented" group. In 2021, 5 of the tested players were appointed to the National Junior Women's Team. Somatic measurements and tests assessing the level of physical fitness were carried out in the fall of 2020 - in accordance with the training calendar in effect at the OSPRs.

Meanwhile, the knowledge test assessing the level of tactical skills - the TACSIS test was conducted in the spring of 2021. In order to answer the research questions posed, the collected material was processed using commonly used methods of descriptive statistics. Prior to the analysis, the results of individual fitness test samples were converted into points, which made it possible to use parametric tests. Comparison of the values of quantitative variables in two groups (the group of "gifted" athletes and the group of "other" athletes) was performed using the Mann-Whitney test.

In addition, in order to better illustrate the differences between the players representing the highest sports level (national representatives in the junior female category) and the studied groups of female soccer players, the values of normalized indices for somatic characteristics and the studied motor skills and tactical skills were calculated.

In our study, the gifted players significantly outnumbered their female counterparts representing a lower sporting level by body height. In addition, the studied national junior female representatives playing in the goalkeeper and pivot positions were distinguished by their body height in comparison with their peers training in OSPRs. Undoubtedly, therefore, there is a relationship between somatic build and the ability to achieve high sports results in handball. This is also confirmed by the individual case analysis carried out in this study on the players who achieved the highest sports level among the handball players studied. Of course, the differences in terms of somatic constitution between the national representatives and the rest of the studied female athletes were particularly evident in female players specializing in the goalkeeper and pivot positions. The study analyzed the results of tests of young female athletes in the course of biological maturation, which causes marked changes in body structure and thus can have a significant impact on current sports performance. It seems that tests assessing the level of speed and strength abilities can be useful in identifying the most talented handball players, i.e. those who have the potential to play at the highest level. Statistically significant differences were noted between the gifted players and the other handball players tested in the case of the test assessing the ability to change direction quickly (4 x 10 m shuttle run). This skill - extremely important when playing handball - is conditioned to a large extent by the level of power of the lower limbs, hence also the significant and statistically significant advantage of female athletes representing a higher sports level in the

test of reach jump and running speed (60 m run). Of course, it may come as a surprise that the intergroup differences are somewhat different for tests measuring the same aspect of motor skills in the INKF and MTSF tests - for example, the reach jump and the long jump from a standing position (no significant differences between the compared groups), as well as the 60m run and the 50m run. It should be noted, however, that always better results were obtained by female athletes considered prospective (talented). It is also necessary to remember certain limitations of the performance of fitness tests, especially tests assessing speed and power abilities, the time of which is short. We should also note the statistically significant differences between the results of the two compared groups of handball players in the test of arm strength (arm flexion in support) and tests of aerobic endurance - 800m run and beep test. This is because more endurance athletes can perform training tasks for a longer period of time, making training more effective. It should be noted, however, that in the case of individual tests of the FMS test, female athletes representing a higher sports level statistically significantly prevailed only in the test assessing mobility and stability of the trunk, hips, knees, as well as the ankle joints (a squat in a lunge). On the other hand, analysis of the individual measurement results of female national representatives provided interesting information on the subject. The selected female handball players significantly outweighed their peers from the Handball Training Centers in terms of functional fitness level - with the exception of the left wing player. Attention should be paid to the results of measurements of the goalkeeper, who achieved significantly better results in each of the trials of the FMS test than the other players tested. Of course, this result should not come as a surprise given the goalkeeper's playing technique and the motor activities she performs during the game. On the other hand, in terms of individual tests of physical fitness (MTSF and INKF), the goalkeeper was no longer characterized by such good results compared to the other groups, although she achieved very good results in tests assessing spinal flexibility, running speed and lower limb power. In the case of field players, some differences in the level of individual motor skills were marked between handball players playing in different positions.

However, the predominance of female representatives of the country in terms of the results of physical fitness tests as well as individual motor tests included in them was in most cases very high, especially over the group of players who were not classified as talented.

Also in our own research, high correlations were noted between the results of the test assessing technical-tactical knowledge and skills and the sports level of female handball players completing the stage of targeted training. The players studied who were considered talented by the specialists were definitely distinguished by their ability to make decisions

during the game and to position themselves on the field, take actions with the ball, and make decisions depending on the actions of the opponent. In addition, all of the field players representing the highest level of sportsmanship (national representatives) scored significantly better on the TACSIS test than the handball players from the OSPRs. However, the goalkeeper's score is not surprising, as this player is required to have specific and different behaviors than field players in terms of her ability to take action with the ball, as well as to make decisions depending on the opponent's actions.

However, it is worth emphasizing that, regardless of the type of tests used, the most effective methods of identifying sports talent are comprehensive, which include an assessment that covers the widest possible range of skills and qualities. A key role in the process of identifying sports talent should be assigned to coaches and experts. The subjectivity of coaches can strongly influence decisions on the selection of players for sports groups. Therefore, coaches with extensive experience and relevant qualifications are more likely to make an accurate selection of sports talents. It is their experience and intuition that helps them spot talent that others may not notice.

The analysis made in this paper allows us to formulate the following observations and conclusions:

1. Body height is one of the most important criteria determining the choice of the player's playing position and significantly determines the sports level of handball players at the analyzed age.

2. The study confirmed the diagnostic values of the applied physical fitness tests for the purpose of controlling the effects of training work and identifying sports talents at the stage of targeted training of handball players. The strongest relationships with the sports level of the analyzed female athletes were shown by the results of motor tests assessing speed and power abilities and aerobic endurance.

3. The assessment of functional fitness of young female handball players seems to be particularly important. After all, a high level of it is necessary to achieve sports mastery, and it plays a particularly important role in female players who play the position of goalkeeper.

4. Female handball players representing a higher sports level were characterized by a significantly higher level of knowledge and tactical skills in all parameters studied with the TACSIS test. Therefore, this test can be a good diagnostic tool used to identify sports talents at the end of the stage of targeted training and qualify handball players for further training, for example, in Sports Championship Schools.

5. The evaluation of individual cases of players who were called up to the national team in the category of junior female handball players clearly shows the dynamic nature of mutually compensating factors determining the sports level of female handball players at the analyzed age. The differences in somatic characteristics, motor skills and tactical knowledge related to the represented position of the game, characteristic of handball, were also clearly marked between them.