

Qualificational differences in the structure of archery training on different stages of long-term training

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Abstract:

Safe regimens are a pre-requisite for children and youths who exercise and train in the hot and humid weather. Archery by the structure of competitive activity belongs to the group of high coordinated kind of sports. By direction the technique is oriented on achieving maximal metric result which demands the concern of specific principle of sport training of unity and cooperation of competitive and training activity, perfect formation of movement habits. According to this must be defined the leading value of technical training in the structure of long-term archery sportsmen improvement program.

Key words: archery, differences, stages, indicators

Introduction

Scientific researches in archery athletes training open the problems of sportsmen body moves modulation, physiological mechanism of movement habits, removes of mistakes in targeting process, etc. Results of these researches only partly decide the problems of technical training in archery [1, 2, 3].

Scientific researches of exact technical training in archery are mainly oriented on formation of the structure of moves with use of technical means of education, evaluation of technical training, high qualified sportsmen training level improvement [4, 5].

One of the most important technical training improvement direction in archery can be the analysis of main differences between sportsmen of different qualification.

Aim of research: to establish qualificational differences in the structure of archery training on different stages of long-term training

Material and methods

In this pedagogical observation were included: 25 sportsmen from Ukrainian national archery team (13 men and 12 women). By the indicators of different sides of their training level were done the analyses of their differences. This means that they were the etalon for sportsmen that were on the level of specialized basic training. Among them were 7 merited masters of sport, 13 masters of international level and 5 master of sport of Ukraine. Also, 45 athletes that were on the level of specialized basic training were in the team of main Ukrainian archery sport schools: “Elektron” Lviv and “Komunar” Kharkiv.

Results

Determination of sportsmen training level features on stages of maximal realization of individual abilities and specialized basic training and their comparison was done by four main directions [6, 7]:

- Indicators of archery sportsmen total physical training level on different stages of long-term training process;
- Indicators of archery sportsmen specialized physical training level on different stages of long-term training process;
- Characteristics of archery sportsmen technical training level on different stages of long-term training process;
- Complex characteristics of archery sportsmen technical training level on different stages of long-term training process;

Summarizing the data of comparative characteristics of the structure of archery sportsmen total physical training level on different stages of long-term training process can be stated that most of studied indicators between men and boys and between women and girls are clear differences (picture 1).

Most clear differences for boys are set in next indicators: coordination abilities (control exercises: “flamingo”; complex of coordination abilities; micro interval time test) and all strength qualities (maximal strength and speed-strength endurance). During this only in some control exercises (micro interval 5 sec. and 15 sec. test, Cooper test and pull-ups) boys results were between 64 and 82 % ($p < 0,05-0,01$) from results of archery sportsmen on the level of maximal realization of individual abilities.

Results of other exercises that were included in the block of boys total physical training level on stage of specialized basic training were from 41 to 51 % from the average result of sportsmen that were on the level of maximal realization of individual abilities ($p < 0,01-0,001$). Only in one control exercise for flexibility control (movement of shoulder joint) advantage was on the side of less qualified sportsmen ($p < 0,01$).

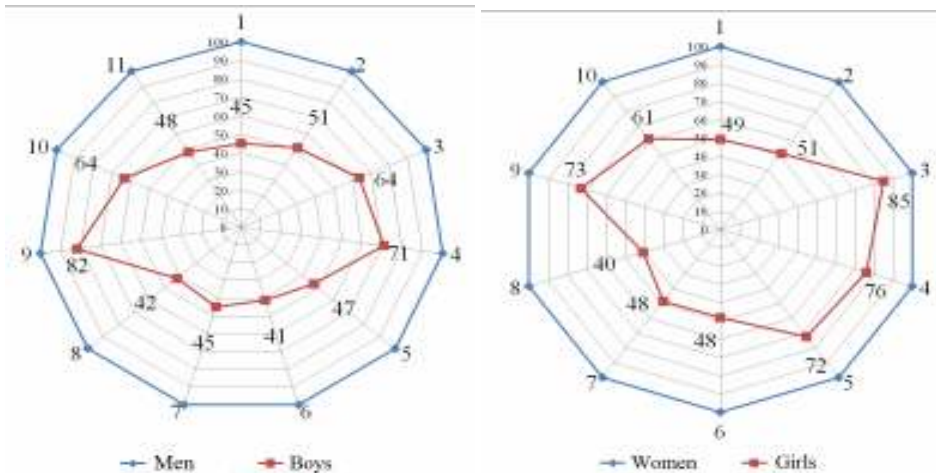


Fig 1. Structure of differences in indicators of archery sportsmen total physical training level on different stages of long-term training process:

1 – “Flamingo”; 2 – complex of coordination abilities; 3, 4, 5 – micro interval time test (5, 15, 30 sec.); 6 – movement of shoulder joint; 7 – push-ups for 30 sec; 8 – bench press; 9 – Cooper test; 10 – (m) pull-ups; 10 (w) – push-ups on bench; 11 – pull-ups on bars.

For girls was made a similar structure of differences from sportsmen that were on the stage of maximal realization of individual abilities. At the same time during the test for micro interval time in all ranges results were higher than boys results and were set at the level from 72 to 85% ($p < 0,05-0,01$) with the comparison with more qualified sportsmen. Also results were higher in qualified sportsmen in such exercises as “Cooper test” and “pull-ups on bench”, that showed a 73% and 61%. On all other exercises the results were much clearer and were in the range from 49 till 60% in the average group result ($p < 0,01-0,001$).

So, for boys and girls and shown similar trends in qualification differences in comparison with sportsmen of higher level in such indicators of total physical training level: static balance, complex of coordination abilities, different strength qualities.

Significant differences in the level of archery sportsmen physical training on these two stages were predictable. At first this was defined by physical features of sportsmen organism. Except this the experience of sport activity, systematic and proper training load affected on the misbalance in training level.

With total physical training level much more informative are the indicators of specialized training level and the structure of qualified differences between qualified and high qualified archery sportsmen that are on the stage of specialized basic training and stage of maximal realization of individual abilities (Picture 2).

In all indicators of specialized physical training level for archery sportsmen on stage of maximal realization of individual abilities and specialized basic training (as for girls and for boys) are set reliable valued differences between $p < 0,05-0,001$. Including similar trends in defined features of specialized physical training and minor fluctuation of main indicators we have connected indicators of boys and girls.

As the analysis of previous group of indicators we have selected groups of indicators by absolute value of differences. So, we noted indicators of control exercises that are oriented on determination of bow strength elasticity, brush dynamometry (right and left hand), maximal traction. In these group average differences in results of qualified sportsmen vary from results of high qualified sportsmen in these control exercises is 62-76% (boys) and 67-80% (girls) with $p < 0,05-0,01$.

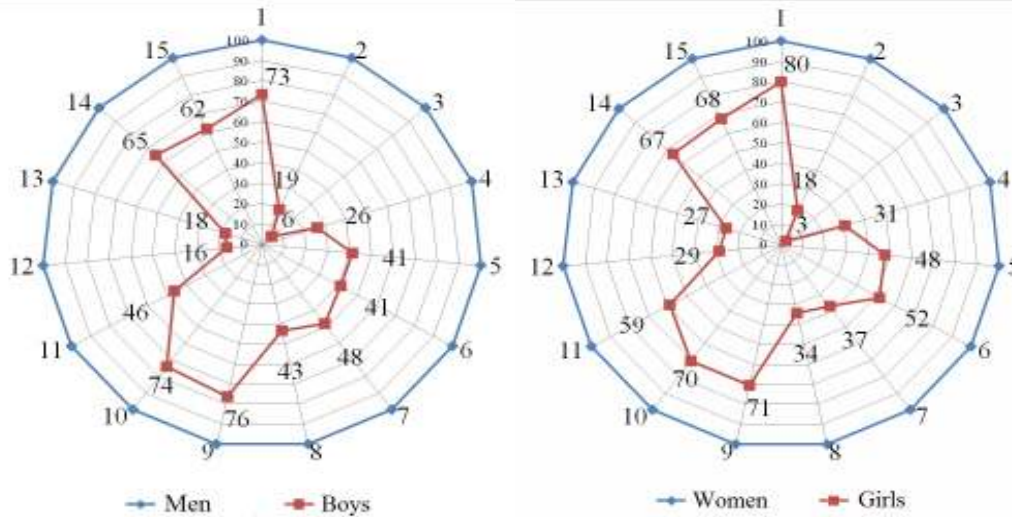


Fig. 2. Structure of differences in indicators of archery sportsmen specialized physical training level on different stages of long-term training process:

1 – bow strength elasticity; 2, 3 – laser holding in target area (opened and closed eyes); 4 – bow holding in stretch position; 5, 6 – bow stretching for 30 sec. (right, left); 7, 8 – exercise “Butterfly” (bend and main position); 9, 10 – brush dynamometry (right, left); 11, 12, 13 – reproduce of muscle strength (0,5 kgs; 0,05 kgs., difference); 14, 15 – maximal stretching (right and left).

Next group of indicators had a percent value on stage of specialized basic training from sportsmen on stage of maximal realization of individual abilities between 31 and 59% with $p < 0,01-0,001$. For boys in this group were next control exercises: “bow stretching for 30 sec.” (right and left hand); exercise “Butterfly” (bend and main position), reproduce of muscle strength (till range of 0,5 kgs). For girls – bow holding in stretch position; “bow stretching for 30 sec.” (right and left hand), exercise “Butterfly” (bend and main position), reproduce of muscle strength (till range of 0,5 kgs).

Third group of indicators with difference ($p < 0,001$) was formed by those in which average result of qualified archery sportsmen was between 3 till 29% from the result of more qualified sportsmen that are on the stage of maximal realization of individual abilities. For boys are next control exercises: laser holding in target area (opened and closed eyes); bow holding in stretch position; reproduce of muscle strength (till range of 0,5 kgs and total sum of deviation). For girls this structure is identical, except the absence of indicator for “bow holding in stretch position”.

So, not considering on the estimated of this qualification differences in indicators of specialized physical training between archery sportsmen on the stage of specialized basic training and stage of maximal realization of individual abilities for further improvement of sport mastery of less qualified sportsmen should be considered grades. There must be maintained and improved the level of strength qualities and its displays. At the same time first time correction must be done with coordination abilities that are only partly shown in indicators of total physical training.

Interesting are results of qualification differences between the technic of a sportsmen shot the stage of specialized basic training and at the stage stage of maximal realization of individual abilities (Picture 3).

Was set that not considering the significant difference in archery sportsmen qualification and their training experience in different situations are present some differences ($p > 0,05$) in indicators that characterize the technic of competitive excersise (shot) between sportmen that are on the stage of specialized basic training and stage of maximal realization of individual abilities.

In characteristics for technic of qualified sportsmen shots (boys) were not set any differences ($p > 0,05$) in such indicators: duration of arrow setting before the start of the work, angle in the shoulder joint after the shot, difference of angles in elbow joint, speed of forearm movement. Average values of these indicators were from 83 till 99% in more qualified sportsmen. Some of the characteristics were at the level of 47–96% from the result of the elite group. At the same time they have testified differences on the level $p < 0,05-0,01$. The biggest dissonance in characteristic of boys and man shot is set in the angles indicators in left hand before and after the shot (15 and 19%), that shows the availability of a mistake in the formation of sportsmen spatial feelings on this stage.

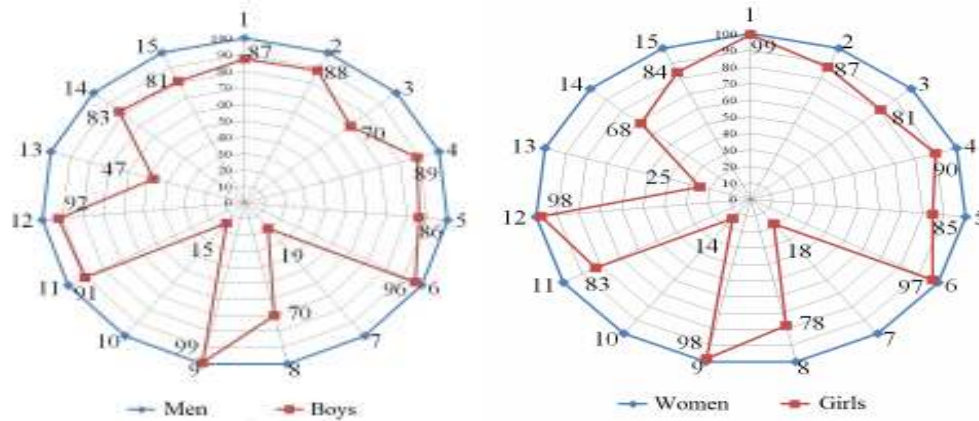


Fig. 3. Structure of differences in the shot technic in archery sportsmen on the stage of specialized basic training and stage of maximal realization of individual abilities.

1 – duration of arrow setting before the work; 2 – duration of stretching to neck stage; 3 – duration of final stretching stage; 4 – total time of main shot stages; 5 – angle in elbow joint before the shot; 6 – angle in shoulder joint before the shot; 7 – left hand angle before the shot; 8 – angle in elbow joint after the shot; 9 – angle in shoulder joint after the shot; 10 – left hand angle after the shot; 11 – angle difference in elbow joint; 12 – angle difference in shoulder joint; 13 – left hand angle difference; 14 – speed of forearm movement; 15 – speed of shouler movement.

Note that in the structure and content of differences of qualified sportsmen (girls and boys) and high qualified sportsmen (woman and man) that are on the stage of specialized basic training and stage of maximal realization of individual abilities are found similar trends. At this the amount of different indicators by which they approach to high qualified sportsman is higher. Almost similar ($p > 0,05$) are average values of characteristics of qualified and high qualified sportsmen are fixed in the duration of arrow set (before work), angle value in shoulder joint before and after the shot, difference of angles in elbow and shoulder joints, speed of shoulder movement (in range 83–99% from the result of more qualified sportsmen). Other indicators are on the level of credible differences, but if more characteristics found differences are in the range of 78–87% with $p < 0,05$ – $0,01$, so for some indicators that are connected with the work of left hand (before, after the shot and difference) they are smaller 14–25% with $p < 0,001$.

In that way, by the analysis of qualified archery sportsmen can be noted that educational and training process in the part of technical training (formation of shot technic) is built with the consideration of adaptation reactions formation. On our thought during the process of the shot the main reason for differences between qualified and high qualified archery sportsmen is different spatial and rhythm feeling that form a need in their improvement. The main attention must be done on the work of right and left hands. This is confirmed by instability of left hand that can take place because of the mistake on the first stage of the shot.

Confirmation for this is difference in complex indicators of technical training of archery sportsmen on the stage of specialized basic training and stage of maximal realization of individual abilities (Picture 4).

By the main indicators that were found in next control exercises: “shoting 18x18”, “M3”, “shooting in sitting posititon”, “shooting on the platform”, “shooting with closed eyes” were set reliable qualification differences ($p < 0,01$ – $0,001$).

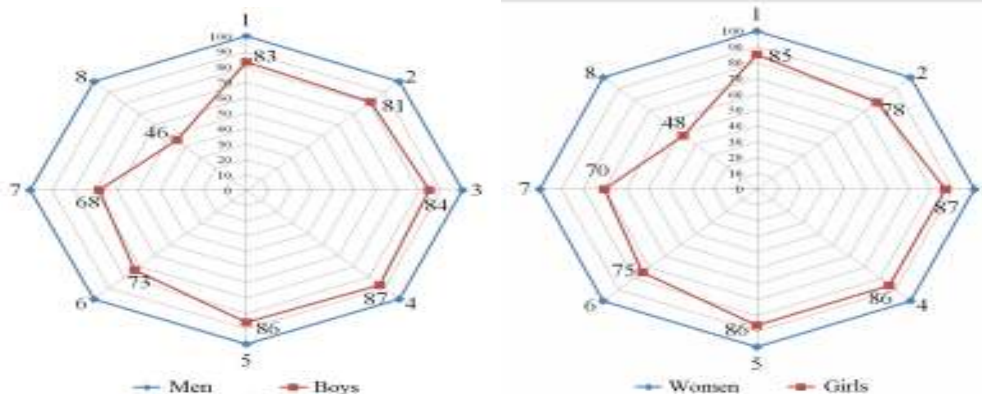


Fig. 4. Structure of differences in complex technic indicators of archery sportsmen on the stage of specialized basic training and stage of maximal realization of individual abilities:

1 – shooting result in exercise “18x18”; 2 – time for exercise ”18x18”; 3 – the sum of 1–30 shots in exercise M3; 4 – the sum of 31–60 shots in exercise M3; 5 – the sum of 1–60 shots in exercise M3; 6 – the sum in exercise “shooting in sitting posititon”; 7 – the sum in exercise “shooting on the platform”; 8 – exercise result “shooting with closed eyes”.

We would like to note that significant differences by the structure and absolute value in indicators of differences of boys and girls that are on the level of specialized basic training from more qualified sportsmen are not found. Significant differences between the average result we connect with much higher level of specialized training and less difference inside the group between archery sportsmen on the level of maximal individual abilities.

For most indicators in control exercises “shooting 18x18” (result and time of the exercise), “M3” (sum of 1-30 shots, 31-60 shots, 1-60 shots) results of qualified sportsmen are in the range from 81 till 87% (boys) and from 78 till 86% (girls) in comparison with the results of high qualified sportsmen. Herewith in control exercises that were done with changing conditions (“shooting in sitting position”, “shooting on the platform”, “shooting with closed eyes”) was found a trend for decadence of results in the group of sportsmen on the stage of specialized basic training. In this options are shown various decadence of indicators as for boys, as for girls (73, 68 та 46% (boys); 75, 70, 48% (girls) with $p < 0,01 - 0,001$).

Conclusions

Qualification determined differences in archery sportsmen on the level of specialized basic training vary from sportsmen who are on the level of maximal realization of individual abilities by next positions:

- in total smaller are indicators of specialized physical training level ($p < 0,05 - 0,01$) and significant smaller results of control ($p < 0,001$) in indicators of control exercises: laser holding in target area (opened and closed eyes); bow holding in stretch position; reproduce of muscle strength (0,5 kgs). Average results of qualified archery sportsmen are between 3 to 29% from the result of high qualified sportsmen;

- smaller ($p < 0,05 - 0,001$) indicators that characterize the technic of the shot and complex indicators of technical training of qualified archery sportsmen and for some the absence of significant differences ($p > 0,05$): duration of arrow setting before the work, angle in shoulder joint after the shot; difference of angles in elbow joint; difference of angles in shoulder joint; speed of forearm movement.

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