

RELATIONSHIPS BETWEEN TECHNICAL AND PHYSICAL TRAINING

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Teaching and perfecting throwing technique and developing physical capabilities - to say nothing of the other elements of a highly complex system of sports development - are organically interrelated and mutually dependent.

This relationship is so strong, that even a slight change, either up or down, in one of the elements (technique or level of physical ability) generates a commensurate change in the other element. This ultimately weighs on the athlete's sports performance.

In theory and practice, this interrelationship was called the "method of combined development of physical qualities and technical mastery" by Dyachkov. This duality concept fits athletes at various levels of qualification, whose technique improvement should parallel their improvement of speed and strength. It not, artificially separating the elements will not facilitate the positive transfer of trainedness and, of course, enhanced sports performances.

One needs to devote the same attention to developing speed-strength as to improving technique. It is scarcely advisable to split up workouts into strength, speed, technical, especially as it relates to high level athletes.

Russian athletes were the first in the world to employ the complex method of training in which a single training session is broken into several components, in which the athlete uses different training loads. For example, an athlete does a general and special warm-up, then performs a certain number of throws, then performs strength exercises, then throws again, then executes strength work or jumping. This type of rotation enables one to vary the training process and accomplish a large training volume.

Positive training outcomes in other types of sports (rowing, biathlon, et al) have demonstrated the benefit of simultaneous, complex technical and physical training. It is possible, with appropriate planning, to attain good sports form 2 - 3 times a year when simultaneously using the various means of training (general physical training, special training and practicing the competitive event).

However, if one merely rotates the means of training, good sports form can be reached only once a year. Accordingly, sports performances improve several times faster when one uses the simultaneous method rather than the rotational method.

Transfer of Trainedness

The problem of transferring trainedness from one activity to another plays a central role in physical education and sports theory and methodology. Experimental research on this topic indicates that when a positive transfer of trainedness occurs, improved performance in certain exercises is accompanied by improved performance in others. When a negative transfer of trainedness occurs, improved performance in certain exercises is followed by worsened performance in others.

In practice, we often encounter the situation in which an increased fitness level in one type of activity fails to exert either a positive or a negative effect on another type of activity. In other words, we have a neutral interaction. According to Zimkin, a “pure” transfer of trainedness (positive or negative) is an exception. In most cases there is a simultaneous positive, negative or neutral interaction between two motor activities.

A positive transfer of trainedness occurs most often when athletes use homogeneous motor skills similar in form and content, in which the athlete repeats either the entire movement or certain individual elements. For example, throwing differently sized implements in place with pivoting, etc.

However, these exercises will not always be accompanied by the wished-for improvements in performance both in special exercise and in the competitive event. Over the course of a certain amount of time (23 years) they become inert in relation to each other. Often, they even exert a negative effect. For example, as the throwing distance of a heavier than normal implement lengthens, the athlete’s performance in the competitive event worsens.

This phenomenon is explained not only by the length of time the exercises are used, but also by the narrow specialization in developing sports form. For example, some hammer throwers often use heavier than normal implements in their training, especially ones weighing 16 kg.

As their goal, they set out to substantially improve their performance in throwing heavier than normal implements and then transfer this improvement to the competitive event. However, the results of such training are not what one would expect.

As their performance in throwing heavier than normal implements improves performances in the competitive event either fail to improve or they worsen. This

result also applies to the use of lighter than normal implements. Clearly, we see these paradoxical interactions even when the motion involved in throwing differently sized implements is identical.

The explanation, apparently, is to be found in the fact that throwing a 16 kg hammer specifically develops strength, whereas throwing a regulation size hammer requires a greater degree of speed-strength ability. Accordingly, throwing excessively heavy implements fosters strength development and hampers speed development (low-level athletes are an exception).

Some exercises exert a positive effect on motor skills (qualitative improvement) but a negative effect on form. An illustrative example is that running training, while bettering the functional condition of the body's autonomic system elevates the level of trainedness for race-walking, but worsens race-walking technique. Although these data have no direct bearing on throwing; this specific case provides a convincing characterization of the dissimilarity that can occur in transfer of trainedness.

There is a positive transfer of trainedness when heterogeneous training methods are used. We are referring to exercises that differ in form and content. In this case, the transfer of trainedness is due to the increased functional capabilities of all bodily systems.

However, this phenomenon occurs only rarely in actual practice; and when it does, it arises in the training of lower level athletes or novices and also in the most simple motor activities. Interestingly, when novices increase their strength, we also observe speed improvements.

However, as qualification levels rise, this effect fades away. Here we encounter a paradoxical situation: when a substantial increase in throwing lighter than normal and heavier than normal implements fails to exert a positive effect on the competitive event.