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Early Sports Specialization

A new policy statement of the American Academy of Pediatrics' Committee on Sports Medicine and Fitness discourages sports specialization and intensive training before adolescence (American Academy of Pediatrics 2000).

In the 1960s and 1970s eastern European and Russian researchers published a vast number of works on early specialization and age-appropriate training methods. They based them on extensive experience with hundreds of thousands of preadolescent and adolescent athletes. In the USSR alone in the 1970s there were nearly 5,000 sports schools with 1,750,000 students (this does not include students of regular schools who exercised after school in sports clubs).

Their experience revealed that early sports specialization—practicing one sport to the near exclusion of exercises or activities of other sports—and early exploitation—subjecting children to adult-intensity training even if this training is diversified—are counterproductive from the point of view of having a successful sports career.

Athletes whose coaches committed these errors usually drop out of sports before they reach the age most conducive for

achieving the highest level championships.

Limiting children and youth to sport-specific and competitive activities of one sport is likely to cause mental burnout. It also may cause injuries because of repetitive stresses on the same body structures applied in the same manner.

Overly intensive training may also cause mental burnout and both sudden and gradual-onset injuries because of excessive training loads. Some of these injuries, while not immediately obvious, are very serious—for example, subjecting joints to pressure greater than 24 kgf/cm² [341.28 pounds/square inch] permanently stops the growth of epiphyseal cartilage and thus the growth of affected bones. Epiphyseal cartilage is 2.5 times less resistant to pulling force than to pressure, so a strong pull on the muscles attached to it can also separate this cartilage from the growing bone (Kus 1977).

Fatiguing children and youth to the point of loss of precision of movements, when the coordination of muscles (and hence the control of the joints) is impaired, may damage their ligaments and joint surfaces, sometimes ending a sports career (Piatkowski 1977).

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News about Our Authors

Henryk Sozanski and **Tadeusz Starzynski**, authors of *Explosive Power and Jumping Ability for All Sports* together with Tadeusz Witzczak, have published a new book on training for speed. The book has been published in the Polish language and Stadion Publishing is considering translating and publishing it in the English language.

The authors of *Podstawy Treningu Szybkości [Fundamentals of Speed Training]* are world-recognized experts on

sports training. **Henryk Sozanski, Ph.D.**, coached several international-class track-and-field athletes. He is a professor and the president of the University School of Physical Education in Warsaw. He has directed research on the optimization of training loads and is the author of more than 300 publications concerning the theory of sports training. **Tadeusz Starzynski** is an outstanding coach and world authority on training for jumps whose works on

the methodology of speed training for jumps are highly regarded by track-and-field coaches. Sprinters and jumpers coached by him have set world, Olympic, and European records. He is the author of more than 150 publications published in 30 countries. **Tadeusz Witzczak, Ph.D.**, judo coach, conducted extensive research on the effectiveness of training of speed and strength. He has nearly 100 publications on strength and speed to his credit.

Early Sports Specialization

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Apart from excessive training loads, a too-frequent application of the same exercises, while allowing the affected tissues to grow, prevents their proper maturation.

Not allowing new tissues to mature makes them rigid, not extensible, so they do not damp the forces applied to them by extending and then returning to their original shape. They either break down or pass on these nonattenuated forces to other tissues. For example, increased stiffness of a tendon (fibrosis) increases the strain on its attachment to the bone, leading to inflammation and eventual separation of the tendon from the bone or, in the case of preadolescents, to separation of the epiphyseal cartilage. Increased stiffness of connective tissue and the recurring injuries it causes may force the premature end of a sports career.

Excessive intensity

The error of subjecting children and youth to overly intensive training was common in the East Bloc in 1960s and even until 1970.

The source of this error was the assumption that child champions will grow up to be adult champions, so children's and youth's sport was organized just like the sports of adults. The stress was on early competitive successes. Coaches, who were held accountable for performance, applied what worked well with adults—especially the high-intensity training.

Eventually experience proved the assumption wrong that early competitive successes lead to high achievements in adulthood, but it took time to see the effect of this policy and so thousands of talents were wasted.

In 1963 an international seminar took place in Leipzig on the long-term effects of

preparing children and youth for high-achievement sports. At this seminar the negative experiences of early sport specialization were discussed and remedies suggested. Scientists were directed to research biological and methodological aspects of sports training for children and youth.

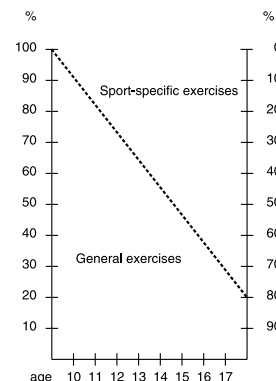
While the research was going on, the old system of sports training was changing only slowly, despite a growing body of knowledge proving the necessity for subordinating the training to the needs of the growing child and not of immediate success in competitions (Sozanski 1977).

After 1970 training systems in the East Bloc were designed to take into account a growing individual's biological development. As a result, in training of children and youth stress was placed on teaching skills rather than developing sport-specific forms of physical abilities and increasing the volume of training rather than its intensity (Sozanski 1977). For instance, it was found better to teach many ways of jumping rather than concentrate on the sport-specific strength for a high jump. More specific directions developed since then are in the book *Children and Sports Training* by Józef Drabik, one of the eastern European authorities on children's and youth sports training.

Versatility

The error of limiting training to exercises of a single sport was not very common in the East Bloc.

Kucera and Novosadova (1976) present a simplified guide to the proportion of general exercises to sport-specific exercises in the form of a graph.



Proportions of general and sport-specific exercises (Kucera and Novosadova 1976)

Here are typical exercises used in the training of a 110-meter hurdler, in addition to technical exercises teaching and perfecting technique of running hurdles, as an example of versatility (Perkowski 1995):

- Acrobatic exercises
- Soccer, basketball, team handball
- Single jumps and multijumps flat and over obstacles
- Throws and puts of light and heavy shots, medicine balls, and other weights from various positions, with one or both hands
- Weight exercises: snatch, clean and jerk, press, full squats, half squats, step-ups, calf exercises
- Running with weights
- Sprints on distances 40–120 meters
- Running distances longer than 120 meters for developing speed-endurance
- Cross-country continuous runs

There are several reasons for including in an athlete's training exercises from many sports. Some of them are: avoiding boredom, finding the most suitable match of exercises to the athlete's needs, and developing general coordination.

Self-Defense Tip

In 1996 emergency departments in the U.S.A. reported treating 112,710 injuries inflicted by cutting or puncturing weapons. Of those victims, 5,352 died. Puncture wounds caused 4,832 of these deaths and slashes the remaining 520. Add these statistics to the practical observation that stabs are faster than slashes and easier to do in a "rapid-fire" series and you should conclude that this is a type of attack you should practice defenses against.

Short, edged weapons are very efficient. They do not require large and strong movements, raising the arm or drawing it back before striking. All the strength required to stab someone is the strength of a push and an untrained person can easily stab at a rate of four stabs per second. To make things worse,

all body parts are good targets. A stab to the hand or arm may disable it and open up lethal targets on the trunk, thighs, neck, and face.

So what defenses are there against such attacks? Give your partner a marker, put on some protective pads yourself (a stab with a marker can cause serious injury, too), and see what you can do. You will not have much chance of deflecting the "weapon" because of the speed of the attacker's light, non-committing movements. Kicking the attacker will likely result in a series of stabs and cuts to the leg that can be either lethal or crippling for life—again because all it takes is for him or her to redirect a light movement of the blade to your leg, a movement that would be too weak and too high to deflect your kick with an empty hand. Grabbing either hand of the attacker without getting

badly cut is not likely either.

You will learn that unless you can prevent your attacker from drawing out the weapon, your best defense is to gain distance, put obstacles between you and the attacker. After you put more than 5 yards between you and the attacker or are behind an obstacle that will slow the attacker down for a few seconds, the best defense against an edged weapon attack is a gun. If you are unarmed because it is illegal for you to have the means of self-defense—your right to self-defense is violated—you will have to improvise and use objects within your reach to defend yourself. You may just get lucky. A stick may match the speed of a knife, thrown stones can stop the attacker, dirt or clothes thrown in the face may disorient him or her for a moment.

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Coordination is developed by learning new and varied exercises and by performing known exercises in new conditions.

General coordination greatly influences the speed of learning sports techniques because learning any new exercise or technique is based on previously mastered skills. The more of these basic movement skills that are mastered by the athlete before specialization, the easier it will be to master the techniques of the sport.

The richer the athlete's store of movement skills, the more skills the athlete can easily learn or change (Bompa 1994, Matveyev [Matveev] 1981). This rule is similar to what E. D. Hirsch, Jr. (2000) wrote regarding academic learning: "The more you know the more readily you can learn something new, because you have a lot more analogies and points of contact for connecting the new knowledge with what you already know."

Premature narrow specialization does not allow for the development of a sufficient versatility of skills. As a result of a premature specialization, the techniques may become rigid—impossible to alter and improve.

The German Democratic Republic, or GDR (East Germany) and the USSR enforced diversity of children and youth sports training by requiring the winning of the badge of general physical fitness, such as the Soviet GTO badge (Ready for Work and Defense), in addition to passing a test of theoretical knowledge and practical skills of the sport, to be admitted to competitions.

Other solutions, which addressed both the narrow specialization and overly intense training, were requiring participation in multiple events for a total score, modifying the rules of a contest (shorter rounds, shorter distances), and enforcing unified training programs. These programs were setting requirements on the number of hours to be dedicated to various skills, norms for skill tests (of various sports—not just the selected sport) to be passed by young athletes, and limits on the amount and intensity of training at various ages to ensure that entry-level coaches did not push their charges to competitive successes at the peewee and youth competitions but prepared them for top performance in adult competitions.

Does early beginning mean early narrow specialization?

Contrary to popular belief, early selection for a sport in East Bloc countries did not mean early narrow specialization and certainly not permanent assignment to one sport.

Here is what Henryk Sozanski (1977) wrote about the system of selection in GDR:

"The effectiveness of sport selection in the GDR does not result from possession of a set of infallible [prognostic] indicators but from an extended process of conducting measurements and observations at subsequent stages of sports training. These measurements and observations conducted over several years reveal the direction and pace of an individual's development. As a consequence the adjustments are made regarding the most suitable sport and training methods."

There are many examples of world-class athletes who were selected for one sport but then changed it because of an emerging greater talent for another. Alberto Juantorena started in basketball and became an Olympic champion in track-and-field (800 meter and 400 meter). Victor Saneyev also started in basketball and won the gold in three Olympics in triple-jump. Waldemar Cierpinski started as an obstacle runner and ended up Olympic champion in the marathon. Johanna Schaller-Klier started in long jump and sprints and became a hurdler. Janusz Pawlowski started as a swimmer and won the Olympic silver in judo.

Accuracy of early selection is low because of the limited divergence of movement abilities and other factors that determine sports talent in children (Filipowicz and Turowski 1977). In other words all the athletic abilities correlate highly in small children, so a strong child is likely to be fast, agile, and have good endurance. With age and with training the abilities gradually diverge so there is less and less correlation among them—those most strong are not necessarily most agile, and so on. This divergence of abilities is similar to what occurs in the training of beginners: Initially any exercise improves all abilities (wide transfer of training effect) and then, with progress the influence of this exercise narrows down to one ability. This is one more reason for using a wide variety of exercises with beginners

and young athletes—the transfer of training effect is wide for them so they improve even with exercises different than those of their sport while avoiding the hazards of unvaried repetitive stresses.

Cross training

Cross training—participating in two or more sports—is a primitive solution to the problem of narrow specialization. Sure, it is better for a child to practice gymnastics and soccer, for instance, than to drill in exercises of only one sport.

The preferred approach is to enroll the child in a club run by a coach of a sport the child is attracted to, if this coach integrates exercises from many sports into training for his or her sport. A coach with such preparation is also likely to recognize what sport the child has the most talent for.

In Europe cross training was popular in the 1930s and died in the 1950s (Wazny 1991).

References

- American Academy of Pediatrics. Committee on Sports Medicine and Fitness. 2000. Intensive Training and Sports Specialization in Young Athletes. *Pediatrics* vol. 106, no. 1 (July), pp. 154–157.
- Bompa, T. O. 1994. *Theory and Methodology of Training: The Key to Athletic Performance*. Dubuque, IA: Kendall/Hunt Publishing Company.
- Filipowicz, W. I., and I. M. Turowski. 1977. O sportowej orientacji dzieci i młodzieży oraz zmienności struktury ich motoryki. *Sport Wyczynowy* no. 11–12/155–156, pp. 61–67.
- Hirsch, Jr., E. D. 2000. 'You Can Always Look It Up' ... or Can You? *American Educator* vol. 24, no. 1 (Spring), pp. 4–9.
- Kucera, M., and J. Novosadova. 1976. Kontrola lekarska w sporcie dzieci i młodzieży. Presentation at symposium *Medyczne problemy sportu w wieku rozwojowym*. Lodz. In *Przegląd literatury. Sport Wyczynowy* no. 11–12/155–156, pp. 140–144.
- Kus, W. M. 1977. Uszkodzenia chrząstki wzrostowej u młodocianych sportowców. *Sport Wyczynowy* no. 11–12/155–156, pp. 120–122.
- Matveyev [Matveev], L. P. 1981. *Fundamentals of Sports Training*. Moscow: Progress Publishers.
- Perkowski, K. 1995. Biegi krotkie i przez plotki. In *Obciazenia treningowe: dokumentowanie i opracowywanie danych*, ed. H. Sozanski and D. Sledziwski, pp. 77–83. Warsaw: COS RCM-SKFIS.
- Piatkowski, S. 1977. Niektóre aspekty kliniczne uszkodzen narządu ruchu dziecka wskutek przeciazan sportowych. *Sport Wyczynowy* no. 11–12/155–156, pp. 116–119.
- Sozanski, H. 1977. Sport dzieci i młodzieży—zarys problematyki. *Sport Wyczynowy* no. 11–12/155–156, pp. 5–41.
- Wazny, Z. 1991. Mały leksykon treningu sportowego. *Sport Wyczynowy* no. 3–4/315–316, pp. 101–109.

Q and A on STRETCHING and TRAINING (continued from previous issue)

Study these typical questions on stretching and training carefully. You may find information that relates to questions of yours. Questions are in *italic boldface*.

■ ***At the age of 24, can I still significantly improve my jumping ability?***

It depends on the quality of your previous training. If your previous training was done rationally but you have not reached your full potential, then it is likely that with more sophisticated training you can improve your jumping. If the training was rational and made you reach your full potential, then there is no room for improvement. The only way to find out is to train. The selection of exercises and an explanation of training methods for improving jumping ability is covered in detail in *Explosive Power and Jumping Ability for All Sports: Atlas of Exercises* (<http://www.stadion.com/explosive.html>).

■ ***I am a cyclist planning a trip across half of Canada from southern Ontario to Calgary, Alberta. I plan on biking eight hours a day at two-hour intervals averaging 30 km/hour for 18 days, that is not including resting days. I was wondering if you could give me advice on my nutritional needs as it is obvious that I will have a high calorie requirement. Possible suggestions on what I should consume would be handy.***

The information you need is in *Stadion News* (Summer 1995, Fall 1995, Winter 1996, and Winter 1998). You can download all issues of *Stadion News* at <http://www.stadion.com/freebies.html>.

Aerobic endurance efforts increase carbohydrate tolerance, but still low glycemic index carbohydrates are preferred. Make sure that you eat oils that facilitate aerobic function. These oils are fish oils, evening primrose oil, sesame seed oil. You may also need increased amounts of B-complex vitamin, iron, carnitine (a good source for these is red meat), vitamin C (best from vegetables and fruits), vitamin E (from oils and almonds), and minerals such as magnesium, selenium, phosphorus, molybdenum (David S. Walther. 2000. *Applied Kinesiology Synopsis*. Pueblo, CO: Systems DC). Whether you need any of these above what your diet

supplies can be determined by a physician specializing in Applied Kinesiology (AK). You can find an AK specialist near you at <http://www.icakusa.com/directory/>.

Dr. Maffetone (*Triathlete* magazine coach of the year) formulated some special high energy bars. You can buy them at <http://philsbar.com>.

■ ***I am a young judo player and wrestler interested in the short- (endurance, strength, etc.) and long-term side-effects of cutting weight quickly. If you could give me an overview or refer me to an article or book I would be much obliged.***

The severe, short-term starvation and dehydration that some wrestlers, boxers, or jockeys are subjected to in their attempts at "making weight" has been shown to reduce isometric strength, dynamic strength, and muscle glycogen stores. Starvation over a 2½ to 5-day period with up to 7.8% weight loss reduces the capacity to work at submaximal intensities (Sinning, W. E. 1985. *Body Composition and Athletic Performance*. In *Limits of Human Performance*, ed. D. H. Clarke and H. M. Eckert, pp. 45-56. Champaign, IL: Human Kinetics.)

Here is what K. V. Gradopolov, co-creator of the Soviet school of boxing, writes about making weight:

"The proper weight for a fighter is the natural weight at which the fighter shows best results. Indicators of this natural fighting weight are muscular look, no excess fat, good disposition, excellent agility, strength, and endurance demonstrated during sparring and competition.

"A fighter should reduce weight only when he or she has excess fat and when his or her weight slightly exceeds the weight-class limit. In both cases the weight loss is to be caused by losing fat. Fighters who want to lose weight work on aerobic endurance and reduce the amount of high-starch foods such as pasta, bread, and potatoes.

"The passing into a higher weight class of a young, growing fighter who gains weight because of natural growth processes should not be prevented.

"Fighters who gain excess weight (more than their natural fighting weight) lose agility, speed, and endurance" (Gradopolov, K. V. 1969. *Boks*. Warsaw: Sport i Turystyka).

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