

Zbigniew Czajkowski

MOTIVATION AND AROUSAL IN FENCING

“Motivation is a basic factor of rational and goal directed activity.”

Tadeusz Ulatowski

“Motivation does not bring results unless a person realises the aim of the activity and the practical means of achieving the goal.”

Włodzimierz Szewczuk

BASIC INFORMATION ABOUT MOTIVATION AND AROUSAL

“Hold your sword as if you were holding a bird in your hand: not too lightly to prevent his escape and not too tightly to prevent him choking.”

Justin Lafaugère, 1826

If one had to numerate the most characteristic features of modern, top-level sport, one could probably point out: 1) strict specialisation in a given branch, or event, of a sport (in fencing, one chosen weapon); 2) profound individualisation of training; 3) the ever-increasing role of rivalry, and drive to achieve the highest possible results; 4) an increased role and number of competitions.

Considering the increased role of rivalry – striving for better and better results – increased number of big international events, and the ever-increasing prestige attached to Olympic and World Championship medals, it is a small wonder that all leading coaches – among them fencing masters – try to find and analyse not yet fully-exploited factors and aspects of training, in order to increase its quality and effectiveness.

I would add here that the increased effectiveness of training seems particularly important nowadays, as it is difficult to achieve better results by a mere increase of the time devoted to training and of general training loads. The problem is, then, to increase the effectiveness of training – in other words, to do more, and do it better, in the same

amount of time.

The contents, speed, precision; retention of learning in the process of training; the competitor's preparedness, participation and results in competition – in other words, all of a fencer's activities – are influenced by an immense number of factors, such as: age and sex; state of health and basic capacity for effort; certain psychological dispositions; energy fitness and co-ordination abilities; the range of sensory-motor skills (motor habit patterns) acquired in childhood; approach to the sport; training and fighting; knowledge of results at a particular stage of training; forms, methods, and choices of exercises applied in training; successes and disappointments, victories and defeats; dimensions of personality, various traits of temperament; organisation and conditions of training; level of the fencing master's knowledge and his practical abilities; and many, many others.

Among the factors very markedly influencing the effectiveness of training and the results achieved in competition, one should mention motivation and arousal.

Motivation is a set of motives – factors which drive us to a certain activity (ambition; the desire to do something, to achieve something; striving to achieve a goal; the desire to fulfil certain needs). Motivation – connected, above all, with fulfilling different needs – influences our behaviour, activities, and attitudes.

Arousal means a state of activation of the central nervous system – especially the brain cortex – autonomous nervous system, and the organism as a whole. Richard H. Cox writes, "To understand arousal is to understand what basic changes take place in the body, when the organism is activated. When we speak of arousal, we are talking about the degree of activation of the organs that are under the control of the autonomic nervous system." (1) In activation, a vital role is played by the cerebral cortex, hypothalamus, and reticular formation. Arousal may be understood as a continuum from deep sleep (a very low level of arousal) to an extreme state of excitement (a very high level of arousal).

It has been proven, beyond any doubt, that for efficient activity – perceiving, thinking, remembering, learning, performing, decision-taking – an optimal level of arousal of the entire brain cortex (and not only the sensory part, to which impulses from receptors arrive) is vital. This is achieved in the following way: part of the sensory impulses from receptors to the brain pass through the reticular formation;

here they undergo a certain “transformation” and, “transformed”, they activate the entire cortical matter.

In extroverted subjects, the reticular formation has a certain inhibitory action, and this is why the cortex is often not activated enough. In order to raise the arousal of their cortical matter, extroverts are always stimulus hungry, very lively, very active, talkative, noisy, and like many changes.

An introvert’s reticular formation promotes a flow of impulses into the entire area of the cortical matter, which might lead to a high level of arousal. So, introverts – contrary to extroverts – try to avoid a large amount of stimuli, are not very talkative, not very lively, and avoid noisy company, in order to preserve their optimal levels of arousal.

Extroverts and introverts form a very important issue in sport – concerning, especially, the principle of individualisation, communication between pupil and coach, motivation, education, teaching–learning technique and tactics, performance at competitions, etc. I hope to discuss this subject in detail in my next book which – with the help of the gods and Mr Schmid – I will publish in the US.

The results of various levels of arousal and motivation are so similar that some authors equate these two terms. This is not quite right as motivation is a process directed toward fulfilling certain needs connected with cognitive and emotional processes. Arousal, on the other hand, is not directed; the same external signs of arousal – like palpitation, increased blood pressure, increased heart rate, sweating, trembling, etc. – occur in different situations. Arousal is, rather, a physiological process and may be the same, irrespective of the contents of motivation.

In the great majority of cases, with an increase of motivation comes an increase of the level of arousal. One may even say that the effects of arousal and motivation are, mostly, very much the same (see below). An extremely high level of motivation produces a very high level of excitation – but as I have mentioned above, it is not always so. For example: A surgeon performs a very complicated operation on a very important person. His motivation to perform it successfully is extremely high, and yet he tries, and manages, to keep his level of arousal relatively low, knowing very well that too–high arousal would negatively effect his skilfulness and, consequently, the final result of the operation. Another example: A top–class fencer fights for the gold medal. His level of

motivation, desire to win, great ambition, and motive of success are extremely high, and yet he manages to keep his level of arousal on a lower level.

In spite of their immense value in training, many fencing masters and competitors often do not understand the significance and role, in training and competition, of motivation and arousal. Not fully understanding the mechanisms and effects of motivation and arousal, one may commit many errors in teaching, learning, coaching, and competing.

Motivation, stating it simply, is a set of drives connected with definite values and needs, stimulating human beings towards activity in a certain direction, to achieve a certain goal.

One may distinguish positive motivation, (the desire to learn, to win, to achieve something) and negative motivation (trying to avoid something, being afraid of defeat or failure, etc.).

Motives may be either inborn (like all physiological needs) or acquired (like psychological and social needs). We may also distinguish physiological motives (the desire to fulfil physiological needs like sleeping, eating, drinking, having sex, etc.) and socio-psychological motives (the need for domination or submission; the need of affiliation, friendship, recognition, achievement, an active life, etc.).

Motives may also be fully conscious and recognised (a person understands and knows exactly what he needs and wants to attain) or not fully realised, subconscious motives (e.g., a coach tries to be very domineering, very sharp – he gives a string of orders, often shouting; he likes to punish his pupils; etc. – saying that he does it for the good of his pupils, while, in reality, he is – without fully realising it – trying to compensate for his inferiority complex, lack of self-confidence, and, sometimes, laziness).

Taking other criteria of classification, we may distinguish – and this is of extreme importance – intrinsic motivation and extrinsic motivation. Intrinsic motivation is when we want to do something, and do it (e.g., reading, learning, swimming, fencing, working in a garden), because we want it, it gives us pleasure, and we think it is good and beneficial for us. Extrinsic motivation means that we do something, not so much for its own sake, but because we have to, or expect some gain – money, rewards, security, prizes, recognition, etc.

A student may study very hard because he loves it and wants to increase his knowledge (intrinsic motivation), or he may study to successfully pass his exams and obtain a grant or scholarship (extrinsic motivation). Many people play tennis, swim, run, or fence, for fun, fitness, health, and enjoyment (intrinsic motivation), and some cultivate sport professionally to make a living (extrinsic motivation).

Usually, the effects of intrinsic motivation, apart from sheer pleasure, are positive. We do, much better (exactly, effectively, successively, and without undue fatigue), what we like, what gives us pleasure. For example, a musician who loves the violin may practise and play for hours, without feeling fatigue – on the contrary, being very satisfied and in an excellent mood. Einstein, apart from many hours of heavy work as a scientist, spent many hours playing violin, sailing, and walking in the mountains, and was not tired but, on the contrary, it gave him great pleasure, a feeling of fitness, energy, and optimism. The effectiveness of compulsory activity is usually less positive.

Some readers may protest, giving examples of outstanding professional tennis, basketball, or soccer players, who cultivate these sports for enormous amounts of money. Here I have to explain that we distinguish – and this, again, is very important – **two functions of extrinsic motivation: one is positive and one is negative – the informative function and the control function.**

The informative function of extrinsic motivation means that money, awards, and publicity, “inform” the athlete, coach, club, press, and public about the talent, efforts, success and achievements of a given athlete.

The control function of extrinsic motivation means that the athlete is forced to train very hard, to attend various training camps, and to take part in many competitions, because he is obliged to, he is paid for it, and he has to obey orders. His activities and actions become externally directed and controlled; he ceases to be his own master. This function of extrinsic motivation has a definite negative influence on human dignity, personality, and competition results.

The best combination is strong intrinsic motivation “supported by” the informative function of extrinsic motivation. This set of motives occurs among well-known, top-class professional athletes.

The salient features and assets of intrinsic motivation, and the resulting activity, can

be briefly summed up as follows:

1. Activity (exercises, competitions, and everything connected with fencing) influenced by intrinsic motivation, forms a source of pleasure, joy, and satisfaction.
2. One does, efficiently and eagerly, what one likes and what gives one pleasure.
3. Intrinsic motivation encourages activity; it is conducive to deep and many-sided analysis of our possibilities, training, results in competitions, etc., and gives insight to new and more efficient ways of solving problems connect with cultivating fencing.
4. Even a very high level of intrinsic motivation does not always diminish efficacy and results of our activities. A high level of intrinsic motivation may not lead to too high level of arousal.
5. Intrinsic motivation diminishes the perception of fatigue and helps the process of recovery after heavy effort.
6. Intrinsic motivation leads to a high level of interest in one's sport (cognitive factor) and a love of one's sport (emotional factor) – which influence each other positively, increasing, at the same time, concentration and selectivity of attention.

Summing up the value and meaning of intrinsic and extrinsic motivation, we should state that:

1. The most efficacious and socially valuable is intrinsic motivation.
2. In high-level competitive sport and professional sport, good results are created by a combination of intrinsic motivation with the informative function of extrinsic motivation.
3. The control function of extrinsic motivation does not produce good results and its social and educational value is very low.

It should be stressed that there is an immense diversity and variability of motives for cultivating sport. An immense number of different factors attract people to sport: the desire to be successful, to display one's value, to gain social recognition; the sheer pleasure of movement and effort; fascination with a given discipline of sport; promotion

of health; keeping and developing motor fitness; contact with water, snow, forests, and mountains; social contact; satisfying many different (often not fully-conscious) socio-psychological needs, like domination, friendship, aggressiveness, affiliation, etc. One can notice marked differences of motives among people cultivating high-competitive sport (element of fight, rivalry, recognition, success, achievement) and those cultivating recreational sport (active rest, joy of movement, psychological relaxation, promotion of health and fitness, social contact). The results of a lot of research seem to indicate that, in the cultivation of sport – especially the high-competitive variety – the most important factors are socio-psychological.

Human behaviour is usually multi-motivational (stimulated by many different motives) – meaning that one activity may, at the same time, satisfy several needs, which may be biological (need for food, drink, oxygen, reproduction, etc.), psychological (need for affection, for domination, for belonging, etc.) or social (need for achievement, recognition, co-operation, productive work, etc.). For example, even such a simple function like attending a big dinner, not only satisfies our basic biological need for food and drink, but also our need for meeting interesting people, exchanging ideas, relaxing, talking, enjoying good wine, discussing training and competitions, etc.

Likewise, there may be many motives which attract a person to cultivate fencing: sheer pleasure of physical activity and effort; desire to be fit, strong and fast; the need for recognition; desire for an outlet for aggression; a competitive attitude and desire to compare oneself with others; self-realisation and the need to develop one's personality; fascination with history of fencing and its athletic modern version of today; desire for self-esteem and higher social status; etc.

Motivation plays a particularly important part in a fencer's activity – both in training and competition, as previously mentioned. **A fencing master who does not understand the influence of motivation on our activity, and the effect of motivation on the level of performance, may, and usually does, commit many serious mistakes in his teaching and coaching.**

At competitions, one can often see a coach exciting his pupil to produce extra effort, exclaiming, "Come on, you have to score one hit!", "We need your victory!", "We are counting on you!" etc. This usually has a bad effect on a competitor who is already very

highly motivated, nervous, and anxious, and sometimes in a state of panic when, for example, the last hit decides his, or his team's, victory, or his advancement to the final. Such "advice" increases the intensity of a fencer's motivation and arousal, far beyond its optimal point (see below) and does more harm than good.

For many years, many scientists did extensive research and conducted many tests, trying to assess the influence of motivation and arousal on the efficacy of human activity (see below). Before I present the famous laws of Yerkes and Dodson, and other views on motivation and arousal, I will present the results of observations and empirical experience of some leading, diligent coaches.

A high level of arousal and motivation has a negative influence on the efficacy of activity, when:

1. the movements, sensory–motor skills, and capabilities are still not fully acquired;
2. the acquired motor skills and capabilities are difficult, complicated, and demand particular accuracy of execution, and fast and accurate perception of many external stimuli;
3. the movements require particularly precise control of speed, strength, differentiation of rhythm, and hand "stability" (e.g., watchmaker, surgeon, marksman, archer, fencer);
4. a need occurs for lightning–speed choice of action, in the quickly changing and unpredicted situations of a fight or game (choice motor responses, open motor skills; in combat sports, athletic games, etc.);
5. the competitor feels pre–competition fever, competition anxiety; there are fear–producing stressful situations, a high motive of avoiding failure, fear of defeat, high prestige and value of the competition, a great feeling of responsibility for the result (in such cases of too–high motivation and arousal, to demand a higher effort, to excite an already overexcited competitor, to throw a cascade of advice and shout meaningless slogans is a sign of – *excusez le mot* – sheer stupidity).

The positive influence of a high level of motivation and arousal occurs when:

1. the application of large amounts of strength, especially power (strength plus

- speed) is necessary (e.g., weight–lifting);
2. sensory–motor skills and technical–tactical capabilities are perfectly mastered and “easy” for a given athlete;
 3. the application of high speed – especially in simple motor responses – is necessary;
 4. performing certain closed (intrinsic) sensory–motor skills of motor type.

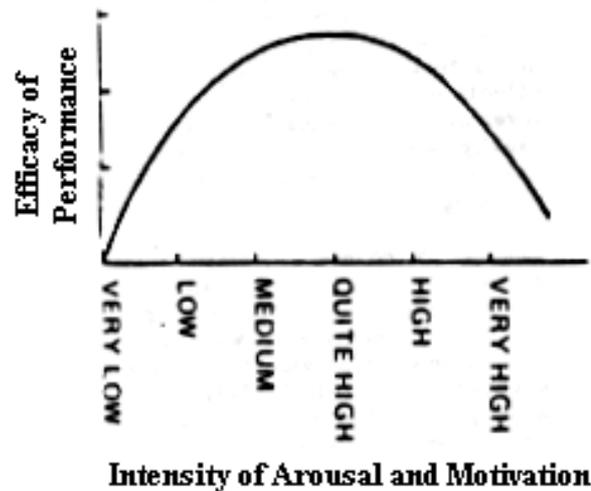
Quite some time ago, two American psychologists, Yerkes and Dodson, conducted extensive research by performing many most interesting experiments on human beings and animals, trying to assess the influence of the level of motivation and arousal on human performance. They described and explained the results of the experiments on the interrelationship between the level of arousal and motivation, and the efficiency of performance, in two laws, known as the First and Second Yerkes–Dodson Laws. Since that time, many psychologists have continued to conduct similar experiments which confirmed the accuracy of Yerkes’ and Dodson’s findings. One may say that, apart from scientific experiments, even everyday observation and common sense can lead us to believe that there is a certain correlation between the intensity of motivation (ambition, desire to do something, fulfilling one’s needs, etc.) and arousal, on one side, and efficiency, quality, and results of activity, on the other.

According to the first Yerkes–Dodson Law, a higher intensity of arousal and motivation increases efficiency and effectiveness of activity, but only to a certain point. When the level of motivation increases beyond a certain optimum point, then the efficiency of activity begins to decrease and, when the level of motivation is very high, the standard of performance becomes very poor. Sometimes too much arousal and motivation act destructively on our performance. See **Fig. 1**.

Life gives us many examples that Yerkes’ and Dodson’s laws are valid. It is enough to look around and reflect on human desires, activities, and the results of our work. For example, a student who has not got a strong desire to study (low level of motivation) has poor results and low marks. On the other hand, an extremely ambitious student may work a lot, possess a great knowledge, and want to impress his professor at the exam; but he wants so much to be brilliant and display his range of knowledge, that in front of the professor at the examination, he can hardly utter a word. This is the destructive

influence of too-high motivation and arousal.

Fig. 1 – The First Yerkes–Dodson Law: The Interrelationship Between the Level of



Arousal and Motivation, and Efficacy of Performance

In sport, we very often observe the negative influence of too high arousal and motivation when the stakes are high. For example: a tennis player misses a simple shot, a soccer player cannot score into an empty goal, an excellent fencer acts technically and tactically far below his normal possibilities and abilities. Sports journalists generally do not understand the paralysing effects of too high level of arousal and motivation in very important competitions, and often criticise the coach: “master stated that the competitor was very well prepared for these championships, but it must have been a mistake.”

During nearly seventy years of fencing activities – both as a competitor and a fencing master – I have seen many striking examples of how too high level of motivation negatively affects the process and results of a bout. To quote only one: At the World Championships in Brussels, 1953, outstanding Hungarian sabreur – many times medallist in World Championships and Olympic Games – Pal Kovacs had already gathered six victories and fenced the last bout against French fencer, Lefevre. The

victory would assure the much coveted gold medal. The much more experienced Kovacs soon led 4–1 and he needed only one hit to become a world champion. Now he became very nervous and excited, and I noticed that his arms and legs trembled and his movements had become chaotic and uncoordinated. Lefevre hit him three times in succession, equalising the score, 4–4. Now Kovacs made a desperate and badly executed attack and received a stop-hit, well in time, but the director (out of pity) awarded the hit against the Frenchman.

Numerous laboratory experiments, empirical experience, and everyday observation of human life and human activities, indicate that the appropriate level of motivation and arousal (ambition, excitement, desire to win, desire to learn something, being interested in something) helps to achieve better results of activity. In fencing, the optimal level of motivation accelerates the process of learning and ensures better acquisition of motor skills, and their successful application in a bout; which leads to more efficient fencing. The best results in training and competition are achieved when there is a proper relationship between the level of activation and the level of difficulty. Too strong excitement, too high motivation, the desire to win at any cost, feverish ambition – especially in very important competitions – lower the performance.

We know from our own experience that when we want something desperately, when something seems terribly important to us, we go to pieces and perform our task far below our normal possibilities. The following example may illustrate the point: we open the door to our apartment hundreds of times, automatically, without thinking about it and without any difficulty; however, if the apartment is on fire, such a simple and often -repeated activity becomes terribly difficult. The nervous tension makes putting the key into the lock nearly impossible.

As I have already mentioned, the Yerkes-Dodson Laws have been, throughout many years, verified many times, and confirmed by means of numerous, ingenious experiments, conducted both on human beings and animals (the observed mechanisms of learning in animals are similar to those in human beings).

Here is an example of one such experiment. Three groups of rats were taught the route of a maze (at the end of a properly chosen route there was food). Group A consisted of rats which had eaten recently; they were not hungry and their level of

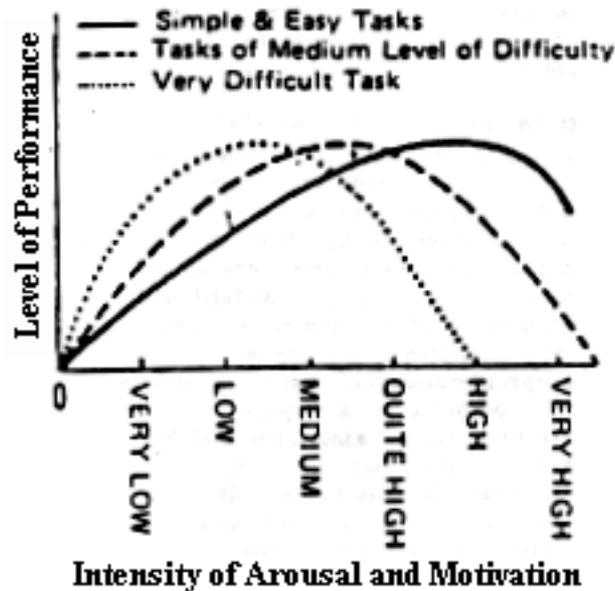
motivation (to find the way to the food) was rather low. Rats of Group B had their last meal eight hours earlier and began to feel hungry, so the level of their motivation and arousal may be described as optimal. Rats of Group C had not eaten for thirty–six hours and, consequently, were desperately hungry (too high level of arousal and motivation). The rats from Group B, with an optimal level of motivation, learned the correct route of the maze after a few trials. The rats of Group A – with a low level of arousal and motivation – required more time and trials to find the correct way in the maze. The hungriest rats from Group C, with very high motivation and arousal, had much more difficulties learning the path of the maze (it took them much longer and many more trials) than the rats from Group B.

Skilfulness and efficiency of activity depends, not only on the level of activation, ambition, desire to win, etc. – in other words, it does not depend only on the level of motivation and arousal – but is influenced equally by the level of difficulty and complexity of the task which one wants to perform (learning something, acquisition of a new motor skill, execution of an action, solving a tactical problem, winning a bout, etc.). According to the second Yerkes-Dodson law, when solving and executing comparatively easy tasks, one achieves high skilfulness and efficiency of learning and performance if the level of motivation and arousal is high; efficient performance of difficult tasks requires a lower level of motivation and arousal.

If we represent schematically on a graph (**Fig. 2**) the interrelationship of optimum motivation and arousal, and the level of difficulty of a task, the optimal motivation for easy tasks, well-acquired skills, is on the right side of the graph and, conversely, the optimal level of motivation and arousal for complicated, difficult, and complex tasks is on the left. In practice, it means that while learning a simple task or executing an easy and well-acquired skill, even very high motivation and arousal – and even the state of anxiety and nervousness – do not lower the efficiency and results of the performance. For example, one may quite effectively perform simple and well-known tasks like washing the dishes, hoovering the floor, etc., even though one is very nervous, anxious, and thinking with great intensity about some serious problems. In the same state of anxiety, it would be impossible to solve mathematical problems, play chess, or fence a bout with an opponent. In other words, the more difficult the task is which we want to learn or

perform, the lower the required level of arousal and motivation.

Fig. 2 – The Second Yerkes–Dodson Law: The Interrelationship Between the Level



of Arousal and Motivation, and Task Difficulty

The second Yerkes-Dodson Law has an equally important role in fencing – both in the process of training and in competition. In accordance with the second law, a low level of motivation is necessary while learning very difficult, complex actions and, equally, while applying complicated actions in a bout – the more complicated and difficult the task, the lower the level of motivation conducive to good results.

Yerkes and Dodson express it in such a way, “. . .an easily acquired habit, that is, one that does not demand difficult sense discrimination or complex associations, may readily be formed under strong stimulation, whereas a difficult habit may be acquired readily only under relatively weak stimulation.” (2)

A very high level of motivation and arousal (strong excitement, desire to learn a new stroke, fighting spirit in a bout, desire to win, etc.) – when learning and applying easy motor skills with relatively simple structures – has a positive influence on speed of acquisition of sensory–motor skills and their efficient application in a bout. On the other

hand, the same level of motivation, while learning difficult, complicated, and dangerous movements, and even more so while executing them at competitions (he faces additional emotions, feelings of responsibility for the result, the opponents' actions) may exert a distinctly negative influence on the efficacy and results of activity. This variable level of optimal motivation in applying difficult motor skills and complicated technical-tactical capabilities in competitions, becomes more obvious and more pronounced in difficult and extreme situations: when for example one hit decides a bout winning a medal; when the team's result depends on the last bout; when the opponent leads with one minute left to the end of the bout; when one must win with a high score to be promoted to the next round.

A competitor with poor technique, a very modest range of actions, and very simple tactical solutions ("warrior" style of fencing), when in a state of high excitation, full of fighting spirit and determination, very often causes serious trouble, intimidates and even beats a fencer whose technique is very correct, versatile, and complete ("technician" style of fencing), but whose high level of motivation causes too late, and not always appropriate, reaction, inhibits boldness, and sometimes even lowers the technical level of his actions, which were his strong points.

This is an example of the positive influence of high arousal and motivation (fencer with simple technique and tactics; "warrior" type) and the negative influence of high arousal and motivation (a fencer of complex technique and tactics; "technician" type). In other words, the same level of high motivation and arousal positively influences the performance of easy and simple tasks, and negatively influences the performance of difficult and complicated tasks – in accordance with the second Yerkes-Dodson Law.

Quite often, in fencing competitions, games, and other spheres of human activity, one may see the paralysing effects of an extremely high level of motivation and arousal (nervousness, great desire to win, fear of losing, responsibility for the result in a particularly important event, etc.). too high level of arousal and motivation may affect even very highly trained and experienced competitors, especially when the competition is very important and prestigious. On the other hand, it often happens that a competitor, after losing a few bouts and realising that he is eliminated (the level of motivation and arousal markedly drops), suddenly achieves the peak of his performance and surpasses

himself.

Profound understanding of the Yerkes–Dodson Laws, not only widens a coach’s theoretical knowledge, but is of paramount practical value. Now let us consider how to apply, in practice, the knowledge of these laws: what to do, how to educate, how to train a fencer in such a way that introducing new actions and abilities will not lower his performance under the influence of high motivation and arousal.

The influence of various levels of arousal and different component parts of motivation (contents, direction, level; intrinsic and extrinsic motivation; achievement motivation – see below) is highly differentiated and specific. The specificity of the influence of motivation and arousal on the competitor, manifests itself as follows:

1. Each athlete has his own optimal level of arousal and motivation, which ensures his most efficient performance.
2. The optimal level of arousal and motivation for each competitor may undergo certain changes during the day (some athletes are better in the morning, some in the afternoon, and some in the evening).
3. Different branches of sport are best performed at different levels of arousal and motivation (billiards, for example, and shooting require a low level of arousal, whereas weight–lifting, a high level of arousal). See **Fig. 3**.
4. Even in the same branch of sport, certain actions are best executed with a low level of arousal (e.g., shooting a penalty in soccer; a compound counter–attack by feint of derobe – derobe, in fencing) while other actions are best executed with a high level of arousal (e.g., a courageous, fast, surprising attack). See **Fig. 3**.
5. Athletes with a strong type of nervous system (high endurance of nervous cells) act most efficiently with a high level of arousal; athletes of a weak type of nervous system, act efficiently with low levels of arousal (this is why – among other things – “weak” types often do better during exercises, whereas “strong” types do better in competitions).

Fig. 3 – Optimum Level of Arousal for Different Kinds of Activities, and Different Branches of Sport

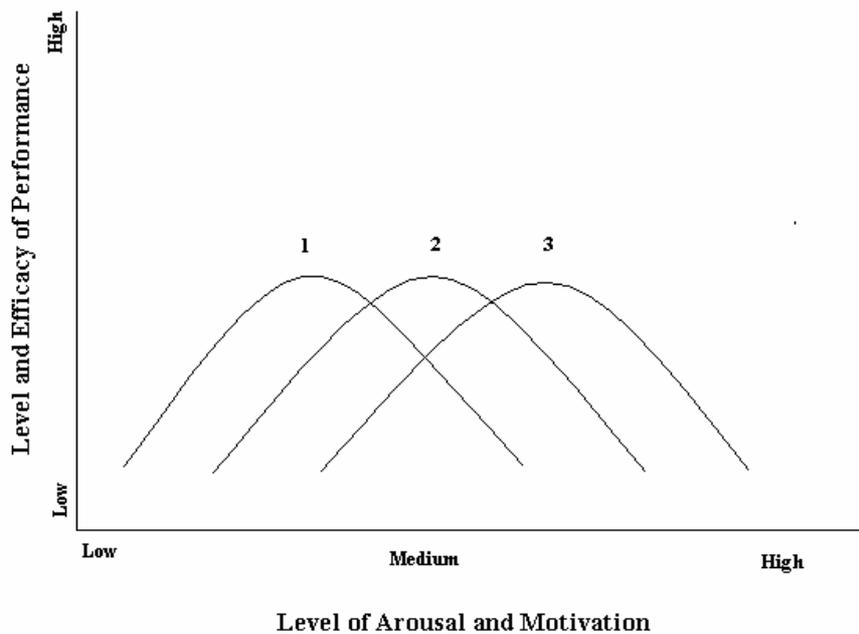


Fig. 3. According to the second Yerkes-Dodson Law, for motor skills and activities demanding a high level of attention, reaction, choice of action, and very precise movements, the optimal level of arousal is rather low. For rather easy, simple skills, demanding strength and speed, the optimal level of arousal is high.

- 1- shooting, archery, golf, billiards, figure skating, penalty shooting, etc.
- 2- fencing, tennis, badminton, volleyball, etc.
- 3- weight–lifting, rugby, boxing, hockey, etc.

Fig. 4 – Optimal Level of Arousal for Efficient Activity in Various Stages of Training

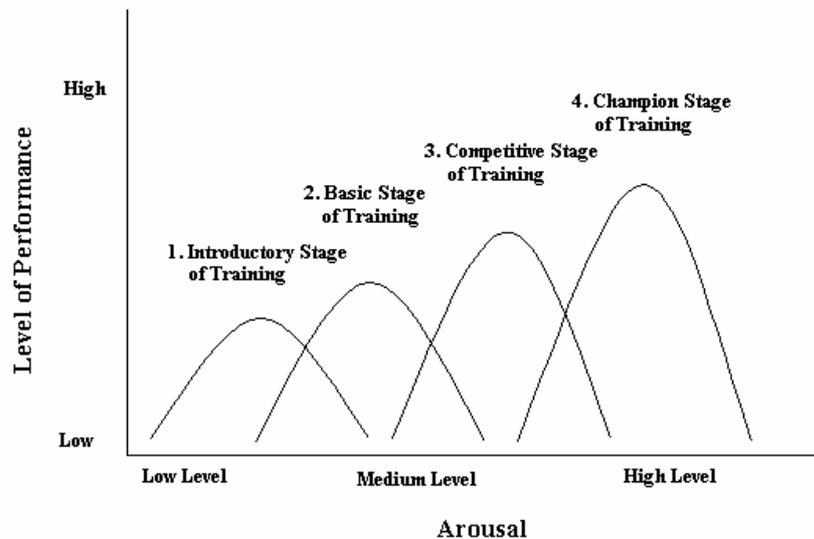


Fig. 4. According to the second Yerkes–Dodson Law, the optimal level of arousal and motivation increases with the level of skilfulness (acquisition of motor skills and technical–motor abilities). This means that, as a fencer becomes more trained and experienced, and his motor skills and capabilities become better acquired, he will be able to perform at increasing levels of arousal.

One can conclude – taking into consideration that, as years of training pass, and a fencer enters higher stages of training with better and better acquisition of motor skills and fencing specific capabilities – the optimal arousal, occurring in practice and competitions, differs in different stages of training. This means that the higher the stage of training, the better a fencer is able to perform at higher levels of arousal (see **Fig. 4**), in accordance with the second Yerkes-Dodson Law.

V. A. Vyatkin expressed the opinion that the strength of the nervous system determines the quality of motor performance – including those in sport activities – indirectly, through motivation. (3) Depending on the strength of the nervous system

(capacity of nervous cells), the level of motivation acts differently on different athletes. So, during exercises (lower level of motivation and lower arousal) athletes with a weak type of nervous system often show a high level of performance, but in competition (high level of motivation, responsibility for results, difficult situations) they achieve much lower results – the quality and efficacy of their activity is markedly lower. Strong types act efficiently in difficult situations, and their results in competitions are not infrequently higher than during exercises.

A characteristic feature of the performance of weak types is not only that in competition they achieve poorer results, but, also, that their results are very inconsistent. Observations and interviews seem to indicate that situations of competition cause, among weak types, nervous tension, too high arousal, diminishment of self-confidence, fear of defeat, and competitive anxiety. For strong types, a high feeling of responsibility, emotions connected with participation in competition, a high level of arousal and motivation, constitute a factor, stimulating energetic and efficient activity.

Generally, one may state that fencers of “warrior” type act most efficiently and effectively when their level of arousal and motivation is very high, whereas fencers of “technician” type act most efficiently and effectively when their level of arousal is relatively low (see chapter: *The “Warrior” and “Technician” Types of Fencers*) . There are – and it is a rather rare occurrence – some outstanding fencers who perform efficiently and effectively, and achieve the highest results, when their level of arousal and motivation, and the level of difficulty, are extremely high. (4) A good example of such a type might be Poland’s Ryszard Parulski – world junior sabre champion, world senior foil champion, and world championship gold medal winner in senior team epee, many–time finalist and medallist of Olympic Games and World Championships – who fenced at his highest, world–class, level when his arousal was very, very high, when he was angry and had quarrels with the referee, opponent, and colleagues (now – by the way – he is a very prominent lawyer; a good example of a successful combination of high–competitive sport and an outstanding professional career).

Generally, however, too high level of arousal – especially combined with a strong fear of defeat – has a negative influence on efficacy of performance, diminishing speed and accuracy of perception and reaction, handicapping various qualities of attention,

retarding decision-taking, leading to inaccurate, clumsy, or even chaotic execution of movements. In other words, it negatively affects all three periods of sensory-motor response (see chapter: *Elementary Conception of Motor Responses in Fencing*). (5)

A fencer with too low a level of arousal sees “too much”: he notices plenty of stimuli, both relevant and irrelevant; he sees not only the opponent, but also the referee, the scoring machine, scoreboard, public, etc. Too much stimuli delays choice of action, as the time for transforming information becomes too long. It is not unlike the driver on the road with a low level of arousal who notices not only traffic, cars, and road signs, but also houses, restaurants, trees, billboards, etc. There is too much information, delaying his correct assessment of the situation, and his decision-taking, and, as a consequence, he may crash into a tree or another car.

A competitor with optimal arousal, perceives only the relevant stimuli: he assesses the distance, the opponent’s movements – trying to guess his intentions – and as the amount of stimuli is rather limited, he has time to transform the information and take the proper decision, and execute the chosen action in time. A fencer with too high level of arousal has a very narrow field of perception and does not perceive – or perceives too late – some relevant stimuli. That, of course, leads to defeat. So, if the coach notices in training – and, especially, in competition – a pupil’s distractibility (a sure sign of too high level of arousal), he must try to apply the adequate means to lower the fencer’s excitation.

To make it clear, we come back to the comparison with the driver (fencing is a mirror of life). A driver with an optimal level of arousal only perceives relevant stimuli: the road, road signs, and traffic. His decisions and reactions are fast and correct. A driver with a very high level of arousal, does not perceive some of the relevant stimuli – which, of course, may lead to an accident.

too high level of arousal and motivation, exert a particularly negative influence on the cognitive-motor activity of children. This is extremely important as, nowadays, in many branches of sport, including fencing, coaches – and the entire system of training – put too early, one-sided, and too strong emphasis on rivalry and competition, which exploits, too much, the vital strength of young athletes, and also does not help stable, accurate, and labile acquisition of motor skills.

Some coaches frequently forget that the main object of the first, introductory, stage of training is not “production” of a young champion, but proper preparation for the next stages of training and the achievement of high and stable results in adult age. Such procedure (too early and one–sided concentration on rivalry, competition, and results) leads to nowhere because, if young athletes win medals in the children and cadet categories, and then achieve much worse results as juniors and seniors, it means that the system of training is wrong (see chapter: *Periods and Stages of Training*). I know many examples of coaches who have produced winners in very young age categories, and yet have not educated a single good fencer over twenty years old.

In certain branches of sport based on closed motor skills (gymnastics, figure skating, diving, etc.) – where judges give points assessing complexity, difficulty, fluency and precision of execution, gracefulness and beauty, appropriate rhythm of movements – it is obviously necessary to introduce new elements of technique, new and difficult sequences of movements, and complicated abilities, as, without them, the competitor would have no chance of achieving good results. The increased level of difficulty, of course, makes the competitor vulnerable to the negative influence of a high level of motivation and arousal.

Some coaches of fencing, boxing, wrestling, and team games (sports based on open motor skills and where individuals or teams directly oppose each other) express the opinion that in order to avoid the negative influence of a high level of motivation and arousal, it is practical to teach a very narrow range of motor skills (motor habit patterns) and very simple tactics. Competitors make up for the limited technical–tactical abilities, and their simple style of fencing, with great ambition, fighting spirit, boldness and aggressiveness (i.e., such intensity of motivation and arousal which is right for easy tasks, but would “kill” more refined technique and tactics). Such a solution initially brings early successes but, in the end, often turns out to be short–sighted. In the further development of a competitor – as he gradually achieves higher results and is bound to meet more and more experienced and versatile opponents – sooner or later, he is forced to increase his fighting repertoire, to increase his technical and tactical capabilities; in other words, to make his technique and tactics more versatile and complicated – which, of course, makes them more difficult to apply. Besides,

compensating for low level and simplicity of technique and tactics, only by aggressive tendencies and a high level of arousal and motivation, inevitably leads to a one-sided, uneconomical style of fighting, and early exhaustion of a competitor's vital stamina and energy.

In my opinion, there is a better solution of how to avoid the negative effects of a high level of excitation and motivation on a competitor's performance and results – at the same time, teaching a wide range of motor skills, many different fencing strokes, a fencer's reactions, and various tactical capabilities.

The first thing towards finding the proper solution, is to realise that feeling, or sensing, the level or degree of difficulty of any task, is something totally subjective, and depends on personal assessment of a difficulty and on the degree of acquisition of a motor skill and tactical capabilities. To change a car's tire may be a dramatically difficult task for a young girl who is just learning to drive a car, and the same task is something childishly easy and routine for a professional driver. In a circus, the performance of a trapeze artiste is liked by the audience when it appears difficult, complicated, and dangerous. Circus artistes perform under a high level of motivation: desire and necessity to execute difficult and dangerous tasks, desire to be applauded by the public, desire to be approved by the director, professional pride, etc.; and, at the same time, their breath-taking and neck-breaking somersaults in the air, must be executed with precision to a fraction of a second, full co-ordination, gracefulness and lightness. In other words, a difficult and dangerous, extremely fast and precise movement – by way of persisting, long-lasting exercises – must become “easy ones” so that their quality (and the safety of artistes) is not negatively affected by the necessarily high level of motivation and arousal.

In many professions, activities, and branches of sport, the “difficult” movements must become “easy” ones, from the performer's (violinist's, magician's, illusionist's, juggler's, contortionist's, tightrope walker's, artistic gymnast's, figure skater's, ballet dancer's, billiards player's, fencer's, etc.) point of view. Opponents' actions in combat sports and team games produce additional difficulty. The conclusion seems obvious: **athletic training ought to be programmed and conducted in such a way that difficult and complicated movements, and other**

necessary abilities, become, for a trained athlete and competitor, easy ones.

Of course, this does not apply only to the mere execution of a movement (motor skills and technical capabilities), but to “reflex” – decided on the spur of the moment – unforeseen application of a given stroke in a bout (technical–tactical capabilities), and to rational, foreseen, efficient, and correct application of a given action in a bout, on the basis of observations, reconnoitring of the opponent, foreseeing his movements, and planning one’s own actions (tactical capabilities).

One of the methods which ensures correct execution and efficient application of difficult movements in fighting conditions, under the pressure of high motivation, is the, so called, over-learning method. It consists of using difficult movements, together with sequences of other strokes, in complicated, changeable conditions, with great speed and for long periods of time. If, for example, a fencer practises artificial, complicated, and difficult fencing phrases, containing, in different settings, ten thrusts by disengagement, most probably using one thrust by disengagement in competition, in an adequate tactical situation, will not be too difficult for him. A “difficult” stroke will become, for this fencer, a subjectively “easy one” – not deteriorating under pressure of high motivation and arousal (see chapter: *Modern Concepts of the Individual Lesson, Part 2 – Basic Methods Applied in an Individual Lesson*).

A kind of over–learning method was introduced in the first half of the XIX century by the famous French master, Jean Louis de Montpellier (who also was one of the coaches who introduced and insisted on using the sixth parry to defend the high outside line). He introduced the, so–called, “reprises” – a method demanding very fast, very accurate, fluent execution of a sequence of fencing strokes, all foreseen and pre–announced. These reprises – perfection of complicated, compound sets of fencing movements, executed fast, “in one breath” – became very popular in the second half of the XIX century, in different schools.

Experience of many generations of eminent fencing masters of the XIX and XX centuries, and their pupils’ style of fencing and results, seem to confirm the efficacy of the over-learning method. I would like to add that many very eminent fencing masters, very often and successfully, have applied, or still apply, the over-learning method

(though, perhaps not calling it that); for example: Giuseppe Mangiarotti, Livio di Rosa, and many of today's leading French coaches.

It has been stressed several times in this chapter, that a very high level of motivation – both positive (great desire to win) and negative (being afraid of defeat) – in competitors, very often leads to a lowering of standard and efficiency of performance. One may counteract this by a properly conducted warm up before the competition, a fencing master's verbal assurance and attitude, etc. (see chapter: *Just Before a Competition*), but most important in this respect is training itself. An athlete's training should ensure that objectively difficult motor skills and special abilities, become for him subjectively easy ones, and that he may execute them in fighting conditions with such ease, lightness, and precision as an expert pianist, ballerina, or acrobat performing before an audience. In order to achieve this, one should use the already mentioned over-learning method, alternating it quite frequently with well-known, well-acquired, easy exercises, which give the competitor certainty of execution and confidence in his skills, abilities, and possibilities, and pleasure in displaying his skilfulness.

Naturally, motivation is not the only factor influencing the course of results of sports training and achievements in competitions, but it is so important and essential – and at the same time its value is not understood enough – that one should devote to its shaping, plenty of time, thought, and attention.

Shaping the right kind of motivation – productive and valuable from the social and educational point of view – and its appropriate level (according the actual level of the competitor's abilities at a given stage of his fencing career, and the proper relationship between his aspirations and actual level of possibilities) is a very important, difficult, and delicate task of a fencing master.

As motivation is a set of factors, propelling us towards activity in a defined direction, in order to fulfil our needs, its development must essentially consist of shaping the appropriate needs, aspirations, values, and drives, related to sport and activities outside sport.

Of particular importance – especially in the first stage of training and in the process of teaching and perfecting sensory-motor skills of a given discipline of sport – is sport enjoyment and love of one's chosen sport.

An athlete's attitude towards his sport should include, not only the desire to achieve certain goals (valuable and attractive as they may be: higher social status, going abroad, gaining money and recognition, being fit and healthy, etc.), but also a pure and spontaneous enjoyment of cultivating a given sport, of performing exercises and taking part in competitions. In other words, he must be mainly interested in his sport, without "interest".

Instrumental motivation, without a feeling of sheer enjoyment of the game, has only limited value. The eminent Soviet fencing master, Vitali Arkadyev, stressed the point by saying, "A coach's first duty is to make his pupil a fencing fanatic," and "Soviet fencers achieve such big successes because they are lovers of their sport." (In the World Championships in Lisbon, 2002, the Russian fencers won six gold and two silver medals.) Barbara Knapp also stressed the importance of this aspect of motivation, by expressing the opinion that, "It is highly unlikely that a person could achieve significant results in a given game or sport, if his or her motivation did not include the need of perfecting his or her own physical fitness, as an aim in itself." (6)

In positively motivating pupils, an important role is played by judicious application of the principle of gradual increase of knowledge and level of difficulty, which includes taking into account perceptive possibilities and a pupil's state of preparedness, at a given stage of training. Too easy tasks are simply boring and decrease the level of motivation. Too difficult tasks have discouraging effects on pupils and very often decrease the level of motivation. Presenting tasks, obviously too difficult and evidently much above the capabilities and possibilities of a competitor at a given stage of training, exerts a particularly negative influence on pupils with great ambition and a great need for achievement and recognition. Such competitors do not even try – or do not even begin to try – to perform a too difficult task, being afraid, often subconsciously, of failure and a feeling of defeat.

Similarly, if, in training bouts, a young and inexperienced fencer opposes a far better and experienced competitor, his reactions may be two-fold: knowing the marked superiority of his opponent, he gives up any attempts to fence seriously and, consequently, his level of performance is also very low; or his reaction may be different – he wants desperately to do well against a much superior opponent, his level of

motivation is very high indeed, and, of course, he cannot fence well.

Rivalry, competing, and comparing oneself with others, constitute some of the most important factors in contemporary top-level sport, and one ought to take advantage of these facts in the process of training. But here, a few words of caution. Very sharp rivalry, used in teaching and training, constitutes an excellent stimulus for pupils with strong nervous systems, high levels of aggressiveness, fencers of “warrior” type, and for people with many traits of a Machiavellian personality. For such people, rivalry is a very efficient way of extracting maximum effort. Methods containing strong elements of rivalry must be applied with moderation, carefully, tactfully, and gradually, when dealing with people who are shy and easily intimidated, have a rather weak nervous system, or are strong introverts, ambitious, sensitive, or belong to the “technician” type of fencer. In the latter case, one should introduce rivalry in such a way as to gradually mould and shape pupils’ confidence in their own capabilities and possibilities, and only after they have gained confidence, should sharp rivalry be introduced.

The coach’s influence on stimulating and shaping the right kind and level of a pupil’s motivation ought to be many-sided and varied. The important thing is to employ, not only one, but a whole array of encouragements, challenges, and motivational influences such as: well organised training; interesting and varied exercises, colourful and attractive ways of presenting them, stressing their usefulness in instilling a love and interest in fencing; the coach’s verbal approval and encouragement; application of praise and prizes, if necessary; constructive criticism; warnings and punishments; appeals to a fencer’s ambition; setting and explaining goals to be achieved; loyalty, affiliation, cohesiveness, and identification with the club, team-mates, coach, and country; presentation of the direct and indirect benefits and assets obtainable from the sport; stressing the meaning of sport as one of the ways to a person’s self-realisation and as a means of enabling fulfilment of numerous physiological, psychological, and social needs; etc.

One-sided motivation, stressing, too much, the importance of the material benefits connected with top-level sport and high-level achievements, may sometimes have negative consequences, such as:

1. It may paralyse a competitor, and decrease and lower the standard of his

performance and results – when, for example, for big sports results, the competitor is promised big material profits.

2. It ceases to be effective when a certain level of attainment is sufficient to keep a certain standard of life and enjoyment of privileges, connected with belonging to an Olympic squad.

Some coaches willingly use, and abuse, negative motivation, by means of punishments, curtailment of certain privileges, warnings, reprimands, financial sanctions, etc., which are very easy to apply. It reminds me of a little-known Napoleonic saying: “It is easier to control people by means of their vices than by means of their assets.” Of course, it is much easier to punish people than to educate them, although, obviously, it is sometimes necessary to resort to these negative means. Nevertheless, exaggerated, one-sided reliance on warnings, punishments, curtailment of privileges, etc., is indeed not very effective and of small educational value.

One has to realise that no one has ever been taught anything positive, or cured of any bad habits, merely by being subjected to punishments and negative motivation.

In shaping pupils’ motivation and instilling positive dimensions of personality, long tradition recommends the need to overcome difficulties and cope with difficult situations. This reminds me of a well-known statement by Pope John Paul II: “The most precious gift that a man can offer God, is suffering.” This does not appeal to me, much like the practice of some coaches who load their pupils with difficult, unpleasant, and even painful tasks, claiming that it is developing their “will-power”. I think that life brings enough frustration, pains, diseases, accidents, that we do not need to seek self-martyrdom. It is quite difficult enough to successfully fulfil several social roles, like: pupil, student, fencer, brother, sister, father, mother, colleague, friend, member of an organisation, etc. St. Augustine’s words, “Mild interest is much better than severe discipline,” appeal to me much more.

The attitudes of many coaches, expressed above, could be expressed as follows: “You have to do not what you would like or enjoy doing, but what is necessary or what you have decided to do.”

Now, I think instead of such self-martyrdom, a far more practical attitude would be: “Enjoy and be willing to do what it is necessary.” As with the majority of educational

advice, this one is also easier to formulate than to apply in practice. In spite of that, I am of the firm opinion that we should strive to educate our pupils in such a way that performing their duties, fulfilling training tasks, etc., becomes for them a need, and at the same time a pleasure.

It is far “healthier” than developing “will-power” by unpleasant tasks because, as we know, we do better and more willingly, those things that we enjoy doing, that give us pleasure and satisfaction. Such an attitude brings out more initiative, new ideas, and allows for longer sustaining effort.

THE MOTIVATION OF CHILDREN

“In the operation of sport programs, the motivating power of joy should not be overlooked. Second, it is important to understand the nature of the sources of enjoyment. . . .”

Tara K. Scanlan
Jeffrey P. Simmons

The coach, training children and youth (the introductory stage of training), should try to answer the following questions:

1. What level of arousal, what contents, direction, and level of motivation are most suitable and valuable for the children?
2. Which motivating factors can be employed to provide children with joy and fun?
3. How to – through the appropriate motivation – ensure their versatile development and, in the future, good results in competition?
4. How to shape the motivation of children, educating and training them and, at the same time, developing their self–efficacy, diligence, active and conscious attitudes, and introducing and developing their passion and interest in a chosen branch of sport?

The key to efficacious motivation of children and youth, is understanding their needs and helping them in the rational fulfilment of those needs. Realising this task, we have to remember:

1. The motivation of children and youth differs in many respects from the

motivation of adults.

2. Motivation in sport activities undergoes changes in different stages of training.
3. To appropriately shape the motivation of children – its contents, direction, level, social value, and value for a given branch of sport – one has to know and understand well the children's needs, interests, and aspirations, and influence them appropriately.
4. Above all, one should remember that it is sport for the children, and not children for the sport.

A factor of immense importance in motivating children and youth – and also adults! – is the ability to set the appropriate main goals (which may even be far-reaching in time) and, resulting from them, more detailed and concrete tasks. Setting different tasks influences the attitudes, behaviour, and activities of young athletes, in many different ways. Among them, it may produce:

1. The desire to demonstrate one's abilities, skills, and possibilities – competitive attitude, a high level of motive of success, **ego-involvement**.
2. Concentration of their entire attention on activity itself – mastery approach, self-improvement, increase of one's skills and abilities, **task-involvement**.

One can gather from much research, discussions, and observations, that children's participation in sports activities fulfils many of their needs (see below) and constitutes a rich source of enjoyment and happiness. The children give, as motives and sources of cultivating sport, many different factors, such as: rivalry and comparing oneself with others; learning and perfecting one's own skills and abilities; comradeship and friendship; the activity itself; the fun of applying acquired skills in a bout; play; competition; comparing oneself with oneself (comparing oneself with one's own ideal); prestige, prizes, and signs of recognition; an outlet for emotions and physical energy.

According to the results of interesting research by L. M. Wankel and P. S. Kreisel, young boys, as a source of fun and enjoyment in sport, enumerate (7):

1. Intrinsic factors; executory factors; enjoyment of the game, itself; personal achievements; applying the acquired skills in a game.
2. Slightly less appreciated are the social factors, like: being a member of a team, contact with friends.

3. The least appreciated are external factors: results and consequences of activities, victories and achievements, receiving prizes, providing pleasure for others (coach, family, colleagues, teachers).

Very interesting research on the sports enjoyment of children and youth – an important factor in motivating and educating, and in the process of training, itself – was conducted by T. K. Scanlan and R. Lewshwaite. (8) Their research once more supported the view that sport enjoyment is not only the result of intrinsic motivation (although, it is very important!), but is also connected with extrinsic factors, as well as some factors connected with achievement and some not.

Intrinsic factors connected with achievement are: perception by an athlete of his own value, skills, abilities, and competence, and might be strengthened by, for example, a feeling of self-efficacy in executing and applying given actions. Extrinsic factors, connected with achievement, influence self-esteem and self-efficacy, satisfaction (feedback – assessment by others, praise, recognition by others).

Intrinsic factors, not connected with achievements (they are a pleasure due to the activity itself): pleasant emotions during exercises and competitions. Extrinsic factors not connected with achievement (they are connected with non-competitive aspects of sport): contact with colleagues, friendship, meeting important and interesting people (e.g., outstanding, great coach, enthusiastic official, etc.), visiting other towns and countries, sightseeing, visiting museums (the latter having educational value, as well).

Knowledge of these problems will allow a reflective coach to apply the appropriate leadership style, fostering, among pupils, interest and love for his branch of sport, and appropriately influencing his pupils' motivation.

In our sport, we should also add, a very attractive and valuable motivational factor, is the colourful, interesting, and exciting history of arms and fencing.

From my many years of fencing activity, observations, readings, talks, and research, I have come to the conclusion that in motivating children, particularly important are the following motives:

1. Play, entertainment, outlet for emotional and physical energy.
2. Ensuring the proper level of arousal.
3. Feeling of self-efficacy and competence.

4. Shaping of “far-reaching” motivation, setting – including long-term – goals and tasks (training, and results in the stages of training, are most important, in contradiction to very fast, inaccurate, slightly nervous, superficial, one-sided training with the thought of achieving good results in the next competitions – “victory at any cost”).
5. Shaping enthusiasm, a love for fencing (emotional factor), and deep interest in fencing (cognitive factor).

ACHIEVEMENT MOTIVATION

“The study of achievement motivation concerns goal-directed behavior, including the causes, direction, and consequences of this activity. It concerns how individuals approach, engage in, and respond to achievement activities as well as the reasons why they engage in certain achievement behaviors.”

Carole Ames

A trait of all living organisms is rivalry – which displays itself in expansionism and fighting. Even plants “fight” for moisture and access to sunlight. Rivalry is necessary for the development of economy, social life, science, culture, literature, art, sport, etc. A lack of rivalry leads to a stand-still.

Sport is noble, sublime, and governed by specific rules and principles of fair-play – with an aspect of rivalry. Without rivalry, there would be no sport – especially high-competitive sport.

One should, then, appreciate rivalry, but not overemphasise it, especially when children are concerned. “Victory at any cost” is an attitude not to be advocated.

Different people show very different attitudes, behaviours, and needs in situations of rivalry, competition, assessment by other people, and when compared to others. **The set of a person’s motives, attitudes, and aspirations, connected with a situation of rivalry, forms, in a way, a stable dimension of personality – achievement motivation.**

From among the numerous motives forming achievement motivation, many authors consider as most important the motive of success (desire to fight, belief in one’s own

success, an active and optimistic attitude) and the motive of avoiding failure (fear of defeat, lack of confidence, pessimistic attitude). According to these authors, the result of a bout is determined by the predominance of a motive of success over a motive of avoiding failure. This is right, although it does not explain everything in these matters – there are other factors, attitudes, and motives, which also determine the result of a fight.

D. C. McClelland and J. W. Atkinson distinguish the following component parts of achievement motivation: motive of success (*Ms*: motive of rivalry, desire to compete and fight, self-confidence), motive of avoiding failure (*Maf*, *FOF*: fear of failure, avoidance of risk), probability of success (*Ps*: perception of the possibility of success, expecting success), inspiring value of success (*Is*: contentment, joy of victory), extrinsic motivation (*Me*: prizes, recognition, benefits, money), motive of avoiding success (*Mas*, *FOS*: fear of success, fear of the expectation by others of further success; this requires explanation: when a young fencer achieves, unexpectedly, a very early success, he or she might be afraid that “everybody” – coach, colleagues, family, journalists, club authorities, etc. – will expect further good results and, in case of poorer results, will be disappointed). Generally, the need of success (*nAch*) embraces achievement motivation. (9) See **Table 1**. (The reader will notice that the need of achievement, the need of success, the need to prove one’s value, all form the basis of achievement motivation, which is composed of several different motives.)

Many authors stress – and rightly so – the immense value of self-confidence and self-efficacy. I think that the main difference between “healthy”, efficient motivation – motivation of success – and motivation of fear of failure, is self-confidence.

One could quote surprisingly many cases when excellently trained and prepared competitors lost important bouts with rather poor opponents, precisely because of a low level of self-confidence and a high level of a motive of avoiding failure (fear of defeat and its consequences). So it is a very important – and, at the same time, difficult – task for a fencing master to motivate his pupil in such a way that he gains self-confidence and believes in his possibilities. It is much easier to teach a pupil how to execute fleche, how to throw a ball into a basket, or how to execute thrust by counter-disengagement with an epee, than it is to instil self-confidence.

Table 1 – Component Motives of Achievement Motivation, According to Atkinson and McClelland

Component Motive	Explanation	Symbol
Need of achievements	Achievement motivation	<i>nAch</i>
Motive of success	Desire to participate in competitions and rivalry situations	<i>Ms</i>
Motive of avoiding failure	Fear of failure; motive of avoiding – or postponement of – rivalry situations; fear of defeat	<i>Maf (FOF)</i>
Probability of success	Perception of probable success; expecting success	<i>Ps</i>
Inspiring value of success	Perception of satisfaction and joy, due to success	<i>Is</i>
Extrinsic motivation	Prizes, praise, recognition; symbolic and financial rewards; publicity; social advancement; etc.	<i>Me</i>
Motive of avoiding success	Fear of success (mainly in women)	<i>Mas (FOS)</i>

(based on the work of H. R. Arkes and J. P. Garske: *Psychological Theories of Motivation*, Monterey, 1982)

J. T. Spence and R. T. Helmreich conducted very interesting research on women's motives and attitude towards work and family. (10) They distinguish four main attitudes, which we might call the main attitudes in achievement motivation. Strangely enough, the results of their tests are applicable to the motives and attitudes of athletes. Below, I present these four main attitudes regarded as signs of achievement motivation in sport (in our case, fencing):

1. **Accent on “murderous” effort, exhaustive work.** Some competitors (and coaches) see the main sources of success only in the quantity of work and

exhaustive effort, minimising the value of technique, tactics, proper methods, and psychology. Such competitors and coaches consider only the quantity, and not quality, of training. There are coaches who take delight in treating their students instrumentally, and imposing “Prussian military drills”, where the only measure of value of the exercises is the level of sweat and fatigue of the pupils – and some fencers, strangely enough, love it and consider it an infallible means to success.

2. **Task involvement – mastery involvement.** The competitors love their chosen sport, and enjoy taking part in exercises and competitions. Their main object is precise knowledge of fencing, improvement of their skills and capabilities, and progress in technique and tactics. The competitors get great satisfaction from improving their skills and self–efficacy, and not only from competition results. Such a fencer, even after he has lost a bout, may still feel satisfaction, if he thinks he fenced well and demonstrated some progress in his technique and tactics. This is a typical attitude – and a variety of achievement motivation – of the “technician” type (task involvement; see chapter: *The “Warrior” and “Technician” Types of Fencers*).
3. **Rivalry.** The competitors, with a strong need for rivalry and achievement, like to show their superiority in competitions. Such fencers are not interested in the fine details of technique and tactics – they want to fight and win, often using very simple actions based on speed, surprise, and aggressiveness. This is a typical attitude and motivation of the “warrior” type (see chapter: *The “Warrior” and “Technician” Types of Fencers*).
4. **Independence and self–reliance.** Fencers who value independence and self–reliance, rely less on a group and more on themselves. They do not want to obey, passively and blindly, the coach’s orders and instructions, but want to, consciously and actively, co–direct – with the coach – the process of training. They enjoy the acquisition of new knowledge and abilities; they like to assess and control the course and results of their training, and the participation in competitions; they like to discuss, with the coach and colleagues, the problems connected with training, their tasks, and their results

in competitions.

These are four extreme types, which do exist in reality – but there are many fencers who are a “mixture” of these types.

Many coaches are of the opinion that the most important, and most successful, motive is the motive of rivalry (a high level of a motive of success, the desire to fight, the desire to win, and belief in success) and an emphasis on intense effort (in other words, the attitudes and motives described in points 1 and 3, above). My many years of practical experience, observations, notes, and analytical meditation, lead me to the conviction that the surest sources of success are in the combination of the following motives: motive of rivalry (optimal level of a motive of success – not mania-like “success at any cost”), mastery motive (task involvement, self-improvement), and motive of independence and self-reliance (points 2 and 4, above, with the optimal level of point 3).

Most generally speaking, the motives connected with rivalry, competitions, and achievements, may be divided into three big groups:

1. Demonstrating one’s skills, capabilities, value, and competence (capabilities and attitudes necessary in competition).
2. Concentration on tasks (task involvement, mastery in – and the consequences of – in fulfilling tasks and self-improvement).
3. Gaining social recognition.

The first and third of the above-mentioned groups correspond to **ego-involvement**; the second group corresponds to **task-involvement**. For fencers with a very strong motive of rivalry (ego-involvement), success is: victory, demonstrating their skills and capabilities, defeating opponents. Fencers with task-involvement, value the improvement of their fitness, skills, and capabilities – which do not, necessarily, have to be connected with victory; such athletes – in accordance with the theory of an ultimate goal (long-term goal) – do not get easily discouraged by lost bouts or failures.

For competitors with marked ego-involvement, who value rivalry and competition, bad results may have a totally different effect, depending on the levels of the motive of success and the motive of avoiding failure. For fencers with a high level of the motive of success, who are optimistic, like rivalry, and believe in themselves, bad results do not have a negative influence: they still believe in their possibilities, and expect good results

in the next competitions. Such types may begin to have doubts about their talent and future successes only after a long series of very bad results. Athletes with ego-involvement, but a very pronounced fear of defeat, react very negatively to bad performance and bad results in competitions.

Recently, as shown by Carron's extensive research, the great majority of leading athletes heavily emphasise and value rivalry – the desire to prove one's competence and the desire to gain social recognition. (11) The motive of self-improvement (task involvement) strongly connected with intrinsic motivation, is less marked – but one should not underestimate it, as it is very important, both from the educational and competitive point of view.

The increased frequency – especially among top fencers – of an accent on rivalry, the desire to win, is understood as a logical consequence of the very essence of high-level, competitive sport; and it is strengthened, also, by the markedly increased role of publicity, mass-media, various ranking lists, a large number of big international competitions, the rising importance of Olympic Games and World Championships, honours, prizes, etc. One should, however, take care to prevent extrinsic motivation – especially its control function – from lowering the importance of intrinsic motives, and the social and educational values of sport. (12)

A FENCING MASTER'S MOTIVATION

"The coach wants the athlete to identify himself with the coach but the most effective way is for both to identify with a common goal."

James E. Counsilman

The motives of a coach's attitudes and activities are as various and versatile as those among competitors. Coaches represent different dimensions of personality, have different temperaments, display various attitudes, and adhere to different leadership styles (see chapter: *Knowledge, Skills, Personality and Work of a Coach*, Table 1). In a flood of very different motives (love of fencing, need of achievement and recognition, desire to educate, etc.), three groups of motivation are most important, and probably

most frequent:

1. Attempting to provide one's pupils – and oneself – with happiness, pleasure, entertainment, active rest, psychological relaxation, and an adequate level of arousal (as mentioned above, each person, and each activity, demands a different, optimum level of arousal – especially of the brain cortex).
2. Taking care of pupils' education; developing their personalities, their all-round and specific functional-motor, psychological, and social development.
3. Striving to ensure the best results, records, victories, and achievements for the athletes and team under one's care. This very often, constitutes the main (and, sometimes, only) goal of a coach's activity – this holds true for, above all, a coach of "warrior" type, whose main object is rivalry, fierce fighting, and success; such a coach, very often, treats his pupils as "instruments" to fulfil his own motives and ambitions.

All three of these main groups of motives, goals of a coach's educational activities, are important and necessary (but without mania-like overestimation of results). One should, however, take care that the "accent" be properly distributed, taking into account the place of work, the pupil's age, the level of competitive preparedness and fencing skilfulness, etc. And so, in a school or children's fencing club, the most important are, obviously, the first and second of the above-mentioned groups, and in an ordinary fencing club (which includes children, adults, recreational and high-competitive fencers) and in the national squad, the most important is, of course, the third motive (but even with strong emphasis on competition and results, one should not forget about sport enjoyment and educational influence).

In schools, various youth organisations, or a children's fencing clubs, it is also important to take care of the versatile, many-sided development of the pupils, comprising:

1. Functional-motor development; enhancement of the state of health; development of resistance to fatigue, difficulties, diseases; heightening of functional and adaptive possibilities; installation of stable habits of motor activity.
2. Shaping of psychological processes (perception, various qualities of attention,

choice of action), educational influence, development of pupils' feeling of self-worth, self-confidence, and self-efficacy; preparation for life and work in society.

In all branches of physical culture – in schools, in recreational sport and high-competitive sport – the coach should not forget about promoting arousal, entertainment, and enjoyment. This is very evident and understood in the training of children and in recreational sport (sport for all), but one should not forget about it in high-competitive sport. One should avoid “martyrdom” attitudes and excessive stress on murderous effort, a great load of work, and exhaustive fatigue.

The personality, motivation, knowledge, and practical capabilities of a coach can be seen distinctly in his style of leadership. We may distinguish the following leadership styles: dictatorial, directive, formal, co-operative, and friendly. The best socially, educationally – and ensuring high and stable competition results, in the long-run – are the co-operative and friendly styles. (13) From the social and educational point of view, the worst style is the dictatorial one. As James Counsilman aptly notes, “It is extremely difficult for an intelligent, mature athlete to form an identification with a coach who sets himself up as a dictator, and whose authoritarian manner must be accepted unquestionably.” (14) It is obvious that, without co-operation, empathy, and reciprocal respect between the coach and pupil, it is extremely difficult to achieve high results.

MOTIVATING COMPETITORS

“Be very careful in educating because an error committed in teaching is considered a premeditated crime.”

Rabbi Jehuda

“The basic problem in motivating athletes during practice seems to be how to make a period of physical stress a pleasant and rewarding experience. An athlete should look forwards to practice with anticipation, and should not merely consider it a period of drudgery that is a necessary prerequisite for him to perform well in competition.”

James Counsilman

Summing up what has been said about motivation, arousal, and motivating a competitor – and their influence on performance, results, and the pupil's attitude – final conclusions may be presented in the following points:

1. One should start by emphasising that motivating and educating a competitor depend, not only on the coach's words, but also – and to a large extent – on his attitude, behaviour, personal example, and also a lot of other factors, such as: a well-planned and –organised process of training; a process of restitution; efficient application of the principle of individualisation; team cohesion; the coach's role; respect for the pupil's personality; promotion of the pupil's initiative; inspiration of the pupil's interest and love of fencing. Here it is very important to remember that various motivational factors may have a completely different influence on different competitors (for example, in many respects, one should use different methods of inspiration and training for extreme types of introverts and extroverts, for “warrior” and “technician” types).
2. Of course, even ably applying the best motivational, educational, and training methods, we cannot make a great champion from a pupil devoid of any fencing talent (as I say, jokingly, to my students, “Even I cannot make a falcon out of a sparrow.”). But, we can – apart from great champions – educate and produce good “medium-level” fencers who will enjoy cultivating fencing, and will be good partners in exercises and competitions for other, more talented, fencers.
3. Extremely important – and, at the same time, very difficult – is the adequate, skilful, and efficacious motivation of a competitor, as far as contents, direction, and level of motivation are concerned. The application of various motivational factors ought to be adapted to the fencer's age, stage of training, and personality dimensions (extroversion, introversion, emotional stability or instability, traits of temperament, etc.). Besides, different needs and motives are prominent in physical education in schools, in recreational sport, in physiotherapy, in high competitive sport, and in professional sport. Shaping adequate motivation – in the wide sense of the word – relies on the development of adequate aspirations, needs, ambitions, and goals in a pupil's activities in sport – and outside of sport.
4. As already stressed many times, the coach should pay great attention to a pupil's

intrinsic motivation, united harmoniously with the informative function of extrinsic motivation. Primitive, one-sided application of extrinsic motivation, with a strong emphasis on its control function, is bad from the educational and social point of view, and very often does not lead to high, stable results.

5. In each stage of training, one has to remember, and promote, sport enjoyment. The coach should emphasise such attitudes, needs, and motives, which cause the fulfilment of training tasks to be a pleasure, not perceived as an external constraint and pressure. It is well known that we work, act, and learn, much more efficiently and effectively when what we do gives us pleasure, it is what we like and what we want to do. It is astonishing how many coaches do not appreciate, or forget about, this fact.
6. A very important and efficacious way of inducing the right motivation of a competitor is a joint discussion on training tasks and results tasks, which favourably influence the competitor's conscious and active attitude.
7. Concerning achievement motivation, the interaction of the coach and team is very important. In this respect, the most important factors are: an optimal level of motive of success, plus task involvement (the desire to increase one's competence, skilfulness, knowledge, etc.) and a feeling of one's independence and shared responsibility with the coach and team-mates. All of this has a favourable influence on self-confidence, and self-confidence acts positively on a fencer in the difficult situations of competitions, lowers the motive of avoiding failure, lowers the fear of defeat, and prevents a too-high, destructive level of arousal.
8. Each competitor differs – sometimes very markedly – regarding abilities, personality dimensions, traits of temperament, and also the contents, direction, and level of achievement motivation. The coach should treat, very carefully and with special attention, athletes with a high level of fear of defeat (motive of avoiding failure) and emotional instability. When dealing with such competitors, the coach should avoid sharp criticism and should, rather, slowly and patiently install self-confidence and a belief in oneself and one's possibilities.
9. One of the elementary qualities of sport is the strongly visible factor of rivalry and

competitiveness. When dealing with children, the coach should not exaggerate the importance of this factor. Children, between the ages of 10 and 14, develop at very different rates, and undue accent on sharp rivalry and pressure to achieve very high results may cause the loss of many talented children, whose natural development is rather slow, but who might – and very often do – achieve excellent results after a few years. I know a surprising amount of cases in which very young fencers made a very slow progress and then, after a few years, achieved top international results. Besides, one should not forget that the set of traits, qualities, skills, and capabilities necessary for successful participation in competition in childhood (introductory stage of training) is very different from such a set for a fencer of adult age (competitive and champion stages; see chapter *Periods and Stages of Training*). With children, the coach should, rather, stress the importance of training tasks over results in competitions. The coach should also stress self-improvement – assessing one's own abilities, capabilities, and progress (without comparing it to that of others). Concerning more advanced competitors, result tasks (the planning of certain concrete results in competitions) should be emphasised with competitors of the “warrior” type; and training tasks (e.g., improvement of co-ordination abilities, acquisition of new motor skills or tactical capabilities) should have priority when dealing with competitors of the “technician” type.

10. Generally, in motivating his pupils, the fencing master, above all, should apply the following sets of motivational incentives: the possibility of fulfilling many different needs by cultivating fencing (in this respect, fencing is a wonderful sport, and it is much easier to motivate fencers than swimmers, runners, or cyclists); intrinsic motives and sport enjoyment, connected with the informative function of extrinsic motivation; the coach's personality and personal example (love of fencing, deep knowledge, practical abilities, punctuality, empathy, ability of interpersonal communication, sense of humour, ability to teach, friendly and co-operative leadership styles, etc.); assignment of main goals and tasks; knowledge of results and their assessment; variability, versatility, choice, and ways of conducting exercises; competition, as a motivational factor; the influence of anxiety, fear, and

difficult situations on arousal and motivation, and efficacy of performance.

11. The known American psychologist, Albert Carron, classifies various motivational factors as follows: a) situational factors (extrinsic), easily changed: symbolic prizes, setting goals and tasks, ways of conducting exercises, social reinforcements, the coach's leadership style; b) situational factors (extrinsic), not easily changed: the presence of other people, participation in competition, the team and team cohesion; c) personal factors (intrinsic), easily changed: initiative, assessment of the results of activity, interest in a given activity, expectations of others, self-confidence; d) personal factors (intrinsic), not easily changed: trait anxiety, state anxiety, need of achievement, style of attention (narrow-wide, external-internal). (15)
12. The same way of treating different pupils may have, sometimes, dramatically different consequences; this is one of the most important conclusions of contemporary research on motivation. It ought to be a challenge for those coaches who think (and act accordingly) that by applying one method of teaching and educating – irrespective of the personalities of the pupils – they can achieve the best level and kind of motivation in all athletes, and the best results in competitions; this, of course, is wrong. Everybody demands individual treatment which takes into account his personality.
13. The coach should remember – and draw practical conclusions from – the fact that, although motivation and arousal are strongly connected with each other, and their effects are very often similar, it is not always so, and motivation and arousal – contrary to some author's beliefs – are not the same. Motivation is directed toward the fulfilment of certain needs, and is connected with cognitive processes (one knows what one wants to achieve, and tries to achieve it) and emotional processes (perceiving joy, pleasure, fatigue, fear, anxiety, hope, despair, etc.), whereas arousal manifests itself as certain physiological processes and signs (increased heart rate, high blood pressure, tremor, paleness, frequency of micturition, activation of certain endocrine glands, high activity of the sympathetic system, etc.). Also, it is possible to keep the optimal level of arousal with a very high level of motivation which, of course, is very important in competition:

a fencer is determined to win, does everything for it – high level of motivation – and yet manages to keep his arousal at the optimal level, avoiding too high level of arousal, which would spoil his performance.

The fencing master – in accordance with the principle of unity of theory and practice, and cognition and action, ought to know and understand well – and take advantage of it in his coaching and educational activity – the essence and significance of various motives. As I have mentioned, each motivational factor has its own meaning and various motives interact and influence each other. For example, the introduction of a system of setting goals and tasks, increases the competitor's level of motivation and leads to an improvement of the training system and competition results. This, in turn, gives fencers satisfaction and improves self-confidence and persistence in trying to attain far-reaching, future goals and tasks. Application of additional, positive social reinforcements, words of praise, increases a competitor's intrinsic motivation, love of fencing, and interest in participation in practice. Similarly, continuously better results give joy and satisfaction, strengthens self-efficacy and self-confidence which, in turn, facilitates achieving still better results in competitions.

Perception of one's own value constitutes a constant component part of intrinsic motivation, and is strengthened by nearly all motivational factors. Contrary to what some coaches think, negative reinforcements – criticism (tactful and objective!) of errors and inefficiencies – also constitutes, especially for intelligent and ambitious people without inferiority complexes, a very efficacious motivational factor. Applying, if necessary, critical remarks, drawing attention to errors and mistakes, the fencing master must realise that a pupil's perception of self-worth depends, to a large degree, on how others perceive him and how they co-operate with him. This is why athletes expect the coach's belief in them, and positive reinforcements – praise, recognition, personal interest in the competitor, a friendly style of leadership, empathy. An equally important factor is the proper assessment of a competitor's results, which influences the way the athlete perceives the causes of his achievements and defeats.

All motivational factors act on a competitor, not separately, but in conjunction with each other, defining, finally, the contents, type, direction, and level of motivation. Let us remember that – as Napoleon said – “Ambition is the engine that moves the world.”

Let us also remember that co-operative and friendly leadership styles facilitate the creation of an athlete's feeling of co-responsibility and independence. An extreme dictatorial style of leadership is not only ineffective, socially bad, and brings bad results in competitions, but offensive to human dignity.

As a final summary of this rather big article, I shall again quote James Counsilman, a swimmer, coach, psychologist, author, and scientist whom I greatly admire (among other things, for a fantastic talent for motivating athletes in such a "monotonous" sport as swimming): **"Not every swimmer or every coach can be a winner. With intelligent, hard work, each can achieve the best that is within him or within his team, and this is the standard he'll be measured by, by both other persons and himself.**

**My self image is more important to me
Than what my neighbor's opinion might be."**

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