

PREJUDICES AND TRUTHS

SPORT IS MURDER

Strength training . . .

Probably you would never have put your foot into a health club if you believed what you read in the magazines. According to *Laut Sports*, December 89, fitness centers are producing "sick people in droves," That is nonsense of course. According to professor Klein's researches (*Sportmedizin* 79, No. 9), fitness training is one of the least endangering sports, as far as sport injuries and sport damages are concerned.

To mention only some of the fashion sports, damaging burdens of essentially higher risk are to be found in tennis and squash. Professor Hollmann pointed out more than twenty years ago that continuous traumatic disruptions, as those resulting from the practice of those sports, lead especially to wear of spine and joints.

Alpine skiers are also exposed to extremely high burdens. The frequent disruptions and sequels are especially negative, seeing that in the summer they cannot perform strength training. Therefore, the weaker the muscle, the bigger the demand on the joint and consequently the more severe the wear.

The most effective protection against premature wear is called strength training at spinal column and joints, because only a strong muscle can make up for continuous disruptions and protect against lateral burdens when jumping and running in the activity. Consider that during a jogging you must intercept the triple of your weight at each step.

For this reason, before you choose an endurance training, whether tennis, jogging, squash, or aerobics, you should prepare your muscles by means of a specific strength training. A powerful muscle protects the joints by holding them together. So, muscle training will spare the spinal column and joints. It sounds paradoxical that straight burden spares and protects.

However, incorrect overload and training can be harmful. The mistakes more commonly made include:

- the application of too high weights for the current abilities,

- implementation of an incorrect technology with the exercise,
- a wrong exercise selection to solve specific weaknesses or deficits, and
- lacking warm up.

The consequences usually are injuries and trouble, such as:

Muscle stiffness

That is palpable, painful date-kernel-big areas in the relaxed muscle area. Local disturbances of the muscle metabolism probably are responsible or but sudden movements for which the muscle tissue was not prepared. Massages help in the cases of muscle stiffness by promoting the circulation. The best prevention, however, is regular exercises from the beginning.

Muscle cramps

Who has never had calf cramps in the night? They are created by a disturbance in muscle circulation. Muscle cramps in the training are mostly due to lacking warm up or to unfavorable climate conditions leading to a liquid and mineral loss. As first aid, stretch the affected musculature, and then loosen it through a massage afterwards. But also here preventing is better than healing. Warm up before the training, and provide a sufficient liquid and mineral supply.

Muscle pain

Muscle pain appears in the course of approximately 12 hours and vanishes again after approximately three to five days. You usually feel the pains when in the movement, hardly in rest. Microrips in the musculature due to overstretch are assumed as the cause. However, once again science certainly plays a little part here. Against muscle pains, pleasantly warm baths and relaxation gymnastics will help.

Muscle strains

Muscle strains are microrips in the muscle fibers. A haematoma will immediately occur as a consequence of the strong circulation in the muscle. The cause of a muscle strain is either the jerky and powerful overload of the muscle at the beginning of the training due to insufficient warm up or towards the end of the training due to the lack of coordination because of fatigue. Therefore, you should

put the high weights right at the beginning of the training, of course after a proper warm up. However, muscle strains may also appear in a more intense way, for example, if previous strains are still present Existing intramuscular scars often cause new strains. As first aid, chill the muscle. Otherwise, only immobilization can help.

Blisters and calluses

Globules containing blood or water can be generated by constant and repetitive pressure or friction, particularly on the palms, between the dermis and the outermost skin layer. These are blisters. Usually, the skin layer is still intact at the blister bottom. The liquid escapes through it. The uppermost skin layer is soon replaced by a new one. In order to protect yourself from infections, you should not open the uppermost protective skin layer. If this has already happened, don't remove the skin, but protect the blister by merely applying a sterile band-aid.

Blisters are a clear sign of overload. Calluses, on the other hand, are a protection formed by horny tissue at places that are particularly exposed to burdens. To a certain extent, some callosity is certainly desirable. If, however, you are inclined to extreme callus formation, you can prevent it with a salicylic band-aid or salicylic paste.

Pains and injuries caused by overload on the knee joints

Pain or injuries to the knee joints are mostly caused by continuous overloads in everyday life or in sport activities. Another cause is overstrain caused by performance overestimation in specific exercises. The braking of the weight, with a deep genuflexion, for example, is one of the exercises that require much strength. In the course of time, strength deficit – that is, the muscle cannot brake the downward movement sufficiently -, may cause chronic overload damages at the cartilage structure as well as other elements of the passive movement apparatus in the knee joint. Therefore, the training weights should always be adjusted well to the current strength abilities. In addition, such individual peculiarities as an X or a Y leg position, and their negative effects on the knee, must be taken into account during exercise selection. If necessary, you should give up certain exercises altogether.

Pain and/or injuries to the spinal column

Actually, you would expect exactly the opposite from your fitness program; namely, to get rid of your backaches. If, however, you get any kind of pain from

your training, you either execute inappropriate exercises or you execute suitable exercises in an incorrect way. Unfortunately already existing injuries are frequently not taken into account at beginning of the training or are not at all recognized. However, that would be prerequisite for a reasonable planning and execution of the training. Therefore inform your trainer about existing injuries and stick to your program. What is good and right for other athletes in the gym can be fundamentally wrong for you. If at admission into the health club you make available all information about existing injuries, such as sciatica pain or even a disk incident, an agreement about exercise selection and the burden height between your trainer and your treating doctor would be commendable.

Strains, blisters, overload pain? – You probably wonder now why you should expose yourself at all to the risk of strength training. Quite simply, because there is something that is even more dangerously than a strength training, – no strength training. Keep this in mind: it spares load and protects you. Only overload harms!

. . . and the endurance training?

Protect your ligaments, sinews, joints and spinal column from the disruptions that may appear during the endurance training by sticking to aimed strength training. Besides, the initial load must be low. Anyhow, the health risk is low in any case. However, you should not make any mistake. Never train if the temperature of the body is higher than the normal, no matter whether the cause is a fever, a tonsillitis, or even an inflamed tooth. This type of mistake is difficult to repair. The result may be a sudden failure of the mitral valve or even death. Therefore, never step on the treadmill with a flu! On the other hand, unlike the strength training, risk is low if compared with the benefit. Your heart adapts to the training by means of a limited growth and a strengthening of the heart muscle. It becomes more capable to pump more blood into the cycle, even with a lower number of beatings. Taking into account the entire lifetime of a human being, an endurance-trained heart, therefore, beats less than an untrained heart. In only one night the heart of an athlete saves as many as 10,000 heart beatings!

Furthermore, endurance training leads to blood pressure lowering and stabilization, except in the case of kidney-related hypertension, which must be diagnosed previously by a doctor. In addition, endurance training in combination with a corresponding diet is the best means to prevent overweight. Beside general metabolism stimulation, a number of biochemical adaptations occur in the body

that impede corpulence and reduce existing overweight. So, the untrained organism channels the bulk of the absorbed nutrients directly to the storages, whereas in the trained organism – even when in rest! – muscles are the first to profit. Additionally, endurance training causes longer satiation feeling. Consider: overweight is not only unattractive, it threatens your health as well. Because fatty cells require a constant supply with plenty blood, your heart is strongly required to overexert, inasmuch as it is frequently underdeveloped and weak in view of the lacking movement (sedentariness). Moreover, fatty cells sugar supply requires insulin, which can easily lead to pancreas overstrain. The consequence is heartsickness and diabetes. Endurance training will help you prevent this situation. Not least, endurance training is also a protection factor, in the case of increased blood fats, against arteriosclerosis. For all these reasons, strength athletes should not neglect endurance.

FITNESS TRAINING – IN MY AGE?

Have you already crossed the boundary of the 50's? Then, I have good news and bad news for you. First the bad one; we cannot hold aging from happening. Therefore, starting from today, you must have in mind that your capability after a so-called high-performance phase, which in general reaches the apex when you are between 15 until 30 years old, will gradually droop. The following factors account for that:

- Wear in the passive movement apparatus, namely: spinal column, joints, sinews and ligaments,
- Amyotrophy, including the heart muscle (myocardium),
- Reduced vital capacity, that is, the quantity of oxygen that you can take in per breath,
- Decreased blood vessels elasticity (higher blood pressure!)
- And an increasingly higher percentage of fat storage, which also has a negative effect on your capability.

All this sounds quite dangerous. Then let's move fast to the good news.

The good news

Through a continuous strength, endurance, and mobility training you will be in a situation to preserve your high-level capability as you move into age. So, the endurance capability of an elder endurance athlete is in average comparable to that of an untrained 20 year-old youth. The same holds true for the strength athlete. I got convinced of that when not long ago I saw a 160-kg, 65-year old strength athlete complete 12 genuflexion repetitions. I definitively would not impose this on an untrained 20-year old. That is, if the performance of older athletes can be far above the capability of young athletes, let alone untrained youth.

If you started your athletic training only after approaching your prime, or you want to resume the training after a long pause, you certainly won't be able to move on seamlessly from past performances – and you should not try this at all. Therefore, it is quite advisable to anyone to avoid too long pauses in the training

after the age of 30. However, you can still achieve an increase in your capability and, accordingly, an essential improvement in your life quality. Furthermore, have in mind that through athletic training you protect your cardiovascular system and also your movement apparatus from illnesses, and you can positively affect their evolution. However, what is applicable to youthful beginners is of vital importance for older people: Undergo a sport-medical examination before the training, and don't overexert yourself! Bring your body rather slowly into the burden, and adjust your training carefully to your physical and health situation. If you stick to these tips, you'll show the youth that the race is not to the swift.

FITNESS TRAINING – IN MY AGE? PART 2

Your son (daughter) is still under fifteen but would gladly train in the fitness center? Then, you should also take into account some peculiarities that result from your child's youthful age.

While the basic endurance training is unanimously regarded as positive already in the preschool age – in principle, it requires the same desirable adaptations that are required from a grown-up -, a few sport scientists disapprove the barbell training before the age of 14 as inadequate for a child. Instead, they recommend general-education body exercises like push-up against the wall, the climbing of a slanted surface only using arm strength, the horizontal bar and the parallel bar (!) or pole climbing. Medicine balls should serve as low additional loads, for example. Why the barbell training is rejected, is unclear. After all, there are dumbbells that are essentially easier than medicine balls! None of the body exercises referred to above allows you to adjust the burden so finely as you can with the barbells. Unlike those exercises, your own weight will often be the heaviest load. Moreover, strength training at the barbell allows, besides a meaningful exercise selection, e.g., all movements while seated on the slanted bank or also on the bench press, a strengthening of the musculature, which relieves the spinal column from most severe efforts. Therefore, some medical doubts are surely not more and not less appropriate than with child doing gymnastics in the school.

However, a widespread movement experience is more important to the child than aimed strength training.

Health club trainers often hear the following complaint: “I would gladly enroll my son (daughter) with you, but he (she) didn't persevere long with tennis (riding, vaulting, gymnastics, judo, ball games, etc).” Learning as many new movements as possible is obviously part of the child's temperament. Because of this, the child should not be hindered, but rather encouraged. Therefore, if you enroll your child with a health club – under compliance with the legal regulations – enter short duration agreements, and support them in their choice to stop training in order to join now maybe a swimming club.

THE WOMAN IN THE FITNESS CENTER

Prejudices against strength training exist copiously. They become especially impressive in the case of woman's strength training. So the majority of the doctors still argued, in the 60's and 70's, that woman's strength performance could not be trained at all. Long before, however, many sportswomen had already proven the opposite. It is evident today that that assumption had less to do with differences in construction and function of the woman body than with social and emotional reservations of the doctors.

With the change of the female beauty ideal from the "weak-sexy female" to the "athletic-feminine woman," the attitude towards strength training also changed fundamentally over the last years. The health clubs record a constantly growing interest in strength training for women. However, there are still a multiplicity of questions and prejudices, which must be addressed immediately right at the beginning of this book, even before discussing the actual topic: "training".

Help – muscles!

According to a stubbornly insistent old rumor, strength training leads to manly-working stalwarts. Actually, a low muscle growth is already to be noticed at beginning of the training. Especially the muscles of the pectoral girdle as well as those of the upper extremities respond with low growth initially. However, the underdeveloped condition, in which these muscle groups frequently were before the beginning of the training, is precisely to account for that. Every form of burden, applied at a specific stage, will lead to a muscle growth, but only within a genetically fixed framework. Each further millimeter muscle increase will require the strict observation of all training principles, besides a calorie supply that above the average demand and a particular genetic disposition. Nevertheless, the fear of muscle growth is considerable among women. Above all, beginners are afraid they have to increase the training weights too much in order to achieve muscle development. They believe that less weight will also mean less muscles. That is wrong. Only a supraliminal stimulus will lead to an adaptation of

the organism. A subliminal stimulus will cause a somewhat less or no adaptation at all. In brief: "If you count to 10 during a set and then break off the burden, you are wasting your time".

What does muscle stiffening mean?

The fear of male muscle proportions is unfounded even in the case of full training with heaviest weights because the male sexual hormones (androgen) are responsible for muscle growth not only in the man but also in the woman. The woman body produces androgens, but only in a restricted volume, so that a muscle growth over 10 percent cannot be reached through training alone and is not to be feared either. Because of the lower androgen production, the woman's normal adaptation to training with heavy weights happens less through hypertrophy (thickness increase) than through an improved intramuscular coordination. In other words, the woman is capable to activate a bigger percentage of the already existing muscle mass. This means not only more strength but also a higher basic muscle tension (tonus). The higher muscle tonus, on the other hand, may be one of the essential factors for muscle stiffness. Becoming stronger, therefore, may be the best proof of muscle stiffness. This will be discussed more extensively in the chapter "Training Principles."

Competition female athletes

The few female athletes portrayed in bodybuilding magazines contradict only apparently, since the competition form in which they are shown represents an exceptional case. The muscle definition that is necessary in a championship requires an unphysiologically high fat and liquid withdrawal condition, which in addition to a plastic working musculature also generates a distortion of the female proportions. In this case, the muscles actually don't disturb as much as the fact that one can see them. Therefore, the reduced content of fats and liquids under the skin accounts much more for that than the musculature itself. The masculine looking of female competition athletes are to be attributed above all to an extreme diet rather than to training.

Breasts and strength training

Maybe in this context, the fear of many women should be accepted: strength training would cause the breast to vanish. As generally known, the female breast consists primarily of fat and glandular tissue, not muscles. For this reason, a direct effect of the training on the breast is impossible. The breast, therefore, cannot dwindle because of the training. On the other hand, nutrition and, likewise, the genetic disposition with which women react to a body fat content reduction will have a direct influence on breast size. While some will lose breast volume first and only then belly, buttocks and legs, others will lose volume first in all regions of the body, and only then in the breast.

In the advertisement, a stiffness of the breasts is frequently praised as due to strength training. Even so, however, it is in no way the case of an immediate effect on the breast, but rather of a chest muscle training, which causes the stiffening of the skin due to a reduced growth and also the stiffening of the breasts.

Training during pregnancy?

Here also the science had to review its concepts again. According to today's realization, in principle nothing is to be objected to an athletic activity during pregnancy. However, it should be emphasized that to a certain extent pregnancy already represents a maximum performance in itself. From this point of view, high burdens can easily become overloads in the sport. Therefore, a reduction in the training intensity is certainly quite meaningful.

Even the influence of the training on the childbirth process is viewed differently today than it used to be a few years ago. It was assumed at that time that a strong pelvic musculature like that of a sportswoman could have a negative effect on the childbirth process. This proved to be false. Much on the contrary, according to today's knowledge, the well-developed belly musculature of sportswomen has an especially positive effect on the childbirth process in two ways. On the one hand, delivery time is shortened due to mother's more intensive cooperation and, on the other hand, the abdomen gets back faster to its original shape after birth.

As a woman, you can therefore train just like your male training fellows without any fear that you'll look like them afterwards. Leave your fears behind. After all, your training is not guided by your sex, but by your goal. If your training goal is muscle stiffening instead of muscle building, you'll find the matching training program in the chapter "Training programs for muscle stiffening."

BUT ARNOLD SAID . . .

If you cast a glance onto the so-called bodybuilding journals and peruses the training programs provided by successful bodybuilders, you will automatically get the impression that you must just lift weights to train your muscles. It seems that all combinations of exercises and intensities are possible and successful in the training. While Mike Mentzer swears by his "Heavy Duty System," Arnold Schwarzenegger is of the opinion that iron-pumping is a mere "up-and-down movement."

Of course, the iron must go up and down. However, in order to achieve the wished training effect, there are already sufficiently secured findings about the how and how often the weight must "go up and down," how heavy it must be, and whether it is to be moved by an explosion or by an evenly massive strength development. The fact that again and again you'll find individual athletes who are successful by applying other methods doesn't contradict with these experiences. There are demonstrably entirely different genetic prerequisites. There are also people who eat pizza every evening and nevertheless do not put on any weight. But this doesn't work out with everyone unfortunately. Muscle training is similar. The number of muscle fiber, the muscle fiber composition, the structure of the contractile albumin, as well as the recovery muscle ability and trainability is fixed genetically. This means that especially privileged athletes can even have an enormous muscle growth, due to their genetic make-ups, if they stick entirely to their training methods. As an example, I got to know one of the most successful amateur bodybuilders, several times world master, who always performed genuflections with the weight left on the barbell by his predecessors. The weight was seemingly no matter for him. Loading and unloading the weights was bothersome. Try this once! You certainly won't become a world master. Unless you belong to the few endowed in whose cradle the good God laid the success.

One who can certainly be regarded as one of those genetic prodigy children is my former training partner Hayrettin Dinger. When asked how he had managed to develop such huge chest muscles, he would always say: "With bench press" –

have you ever tried that? – See also that two athletes that train with the same intensity don't inevitably come to the same results. An identical training program executed by two different athletes can simply lead to considerably different results. Therefore, don't get your bearings by the training habits of other athletes, but by the basic fundamentals of the sport science.

