

# INJURY PREVENTION

## THE CONCEPT OF INJURY PREVENTION

What precisely does injury prevention mean? It means to avoid injuries and it can be divided on three levels :

- avoid the possibility that injuries occur (*primary prevention*)
- treat a injury the best possible way (*secondary prevention*), so that permanent damage does not occur.
- as good as possible after treatment of the injury(*tertiary prevention*), in such a way that an injury does not repeat itself.

The rugby trainer has the most important task concerning the primary prevention. He can do less at the secondary prevention level. He does not need to treat an injury, although he must handle it the right way. First aid is essential. The trainer must be aware that in the case of the tertiary prevention he should not put the injured player too soon into the match.

When one wants to avoid injuries, one should know how injuries occur. The factors that create injuries can be divided into two groups: *individual bound* factors and *environmental bound* factors.

### **Individual bound factors**

Presence of a physical deviation or illness:	If the rugby player has a specific illness, e.g. diabetes, asthma, epilepsy, then it is advisable to consult a GP or a sport physician. One can then ask what the consequences are and what to do when something occurs.
Level of physical fitness:	Stamina, power, speed, rugby technique, flexibility.
Psychological factors:	Concentration, aggression, taking risks.
Body structure:	Length, weight, fat percentage, X-legs, O-legs, instability of the joints, proportions of the neck. In rugby one's position in the team usually depends on the build of the body.
Age of a youth:	As children grow their bone structure becomes thicker and longer. This lengthening occurs from the growth discs, which are situated at the extremity of the bones and at the attachments of the tendons. The growth discs are vulnerable, because they can be slid off (disrupted) from the bone by a sudden brutal force. The growth discs can soften due to overburden by an one-sided (non variation) training, or by a too heavy training, or by technical mistakes. Any complaints at the age of 11-16 year concerning their back should always be treated as serious. The sex of a child starts to have influence at the age of 12-13.

## ***Environmental bound factors***

**Sports bound:** Rugby is a physical contact sport. How many times a week does one practice? Does one play matches? How is the opposition? Is one's position a forward or a three quarter?

**Sports accommodation,** what is the condition of : the playing field, the practice field, the materials, e.g. scrum machine, cushions, etc.

**Sports gear :** The rugby trainer can recommend the specific rugby gear, such as a shinprotector, mouth guard and ear covers. The trainer can observe whether or not a player wears jewels.

**Specific weather conditions :** If necessary the trainer will adjust the outdoor training.

**Trainer :** The structure during the training program and during the season. Warming-up. Organized training. Those are the exact fields in which the rugby trainer can prevent injury.

**Referees:** They should be alert that the scrum will be executed correctly. They ought to have a touch of the atmosphere of the match, to respond (whistle) immediately if a possible danger occurs.

The pressure on the sportsmen depends on the environmental factors and the capability of carrying it depends on individual bounding factors. A perfect situation is there when the pressure and capability of carrying it are in balance. One becomes injury prone when this balance is disrupted. Within injury prevention it is an art to increase the capability of carrying and not to build up the mental pressure too high.

## HOW TO AVOID INJURIES?

### **Measurements to avoid sport injuries**

- 1     **Medical Sport tests** : the rugby trainer can stimulate a rugby player to have a medical test by a sport physician or at a Sport Medical Recommendation Center (SMA, see the local yellow pages). The quality of those tests has improved over the last years. During the test the physician usually advises about diet, taping, stretch exercises, power training etc.  
The sport test consists of a number of items. Including a very detailed medical questionnaire filled out with the sportsman, followed by a physical test in which the accent lies on the movement capacity. The fat percentage is measured as well as the length and weight measurements.  
If one prefers a more extensive test, then a lung function test will be executed. One can also request for an electrocardiogram = a film of the heart. However, such a test is seldom required with youth players. A maximum effort test is part of the extensive test. It is usually done on a bicycle ergonomic meter (= a kind of home trainer ). The medical sport test is done to detect risk factors and to provide sport orientated recommendations.
- 2     The **rugby trainer** should initiate a good warming-up and a cooling-down exercise.     The trainer should instruct the correct way of doing stretch exercises.
- 3     **Teaching** the correct rugby technics.
- 4     **Revalidation.** An injury should be well healed before one fully participates in the sport again. For example : after an injury at the ankle, the muscles of the lower leg must be fully healed. The rugby trainer should guard himself against sending or allowing his pupils to play a match too soon. He can ask for a recommendation from a physician.
- 5     **Taping.** A weakened joint can, in some cases, be supported by taping. This works well with fingers and ankles but not so good with shoulders, elbows and knees and not at all with the hips, back and neck.
- 6     **Rules.** They should be adjustable. An adjustment is to be on an international level. The medical advice committees of the international union are constantly checking and judging the safety aspect of the rules. Rules within particular age categories do differ. Such adjustments can be done on a national level.
- 7     **The playing field.** The flags used for marking the field are to be safe. The railings and poles are to be covered and the field well maintained.
- 8     **Sports gear.** Wear protectors for shin. Knee or elbow protector in case of mucous membrane inflammation. Wear strong rugby gear of the correct size, cleaned and without wear and tear. All players to wear a mouth guard! The forwards should wear ear bandages. The rugby trainer should make his pupils aware of all this. Even the studs of the boots are very essential. The studs should not fail, or be worn out, or of a different length. The use of unsuitable studs is a danger for the player himself as well for the opponent.
- 9     **Education.** The club or the district can arrange information or education sessions by a club physician, or physiotherapist, or an union doctor.
- 10    **First aid.** Does the club kit comply with the standards, e.g. is there ice, bandages, cotton wool, plasters, etc. The club is responsible to replace used items. It is also important to know **whom to phone** after a serious injury occurs; i.e. have the telephone numbers of the GP and the ambulance on hand.

## WARMING-UP

The warming-up has 3 functions.

1. The rugby player performs better after a warming-up.
2. He prepares himself physiological for the training or the game.
3. A good warming-up reduces the risks of injuries.

A warming-up can be *passive* or *active*.

The *passive* warming-up comprises of a massage, or sometimes a warming balm or salve. A passive warming up alone is always insufficient and it should be followed by an active warming-up of approximate 15 - 30 minutes as well.

An *active* warming-up can be divided in 3 stages :

1. Getting on temperature, for 5 -10 minutes. This can be done by running around the field, but with the youth it could be done by means of entertaining games.
2. Muscle loosening and stretching exercises, for 5 - 10 minutes.  
N.B. : Under the age of 10-12 stretch exercises are not required, for the child is supple enough for rugby. Injury prevention has probably little effect. However, the stretch exercises should be done regularly, in order to teach the children the importance of them and how they should be performed.
3. Specific rugby warming-up is with coordination exercises, for 5 - 10 minutes.

## **STRETCH RULES**

1. Stretching has the best results when one is warmed up by running.
2. Start with the correct posture
3. Stretch 8 - 10 seconds.
4. Breath calmly during stretching.
5. Do not push or bounce.
6. Stretching must not be painful, but one should feel it.
7. Relax after stretching.
8. Stretch every muscle or muscle group 1 - 5 times.
9. Change to left and right.

## COOLING-DOWN

**At the end of the training.** Usually, after the last exercise has been done, the participants take a shower. However, the last years it is more popular to finish with a cooling-down exercise. Cooling-down is in fact the opposite to the warming-up: like the body adjusts slowly from a rest position into a strained position, so it gradually needs to return from a strained position into a rest position.

Not having a cooling-down results in the abrupt decline of the blood circulation in the muscles. Then the waste products (e.g. lactic acid) accumulate. This initiates a tense and tired feeling in the muscles, which can eventually lead to stiffness the next day. The muscles are then unable to function fully during the next training or game. The risk of injuries increases.

The effect of a well executed cooling-down is that the blood circulation within the various muscle groups gradually decreases. The metabolism will not accumulate within the muscle cells.

A cooling-down should consist of :

- Easy run in a slower pace, a calm jog, varied with hopping passes.
- Sway with the arms calmly. Do this for 3 - 5 minutes.
- Quiet and easy exercises at the spot. This is in principle in motion with gravity.
- For instance bending forwards with the torso (trunk) and dangling the arms. ■ Shaking the legs or let the legs be shaken.
- Stretching exercises.
- Warm shower followed by a short, cold shower.
- Eventually a massage.

## MOTORIAL CHARACTERISTICS AND YOUTH

Until the age of 10 to 12 years the motorial characteristics of boys and girls is equivalent. After that age a clear difference appear. Boys are stronger and have more stamina. Girls are more flexible.

### 1. **Infant period** : 3 - 6 years of age

Avoid at this age every systematic dictated training load. Forced power and flexibility training and intensive stamina practices are advised against. The speed and agility (skills) characteristics can be built in through entertaining games.

### 2. **Childhood** : 6 - 12 years of age

This period is very important to practice agility and flexibility. The duration-stamina capacity can be trained for. However, a need for an intensive stamina is not yet required. The muscles can be strengthened by dynamical exercises, but only by use of their own body weight.

### 3. **Puberty**: 12 - 16 years of age

These years are suitable for increasing power and stamina capacity. The stamina capacity can now intensively be trained. Speed, flexibility and agility are receiving, as a matter of course, all attention.

### 4. **Adolescents** : 16 - 20 years of age

With the young adult every sort of training can be done. The frame is matured and heavy power exercises can be done as well.

## OVERVIEW OF PREVENTIVE MEASUREMENTS

- 1] sufficient fitness                    - power
  - speed
  - technique
  - stamina
- 2] when in doubt about fitness discuss this with GP or sport physician for check up (weight, flexibility, power, joints, condition)
- 3] allow for sufficient recuperation after sickness/injury and ensure a good body hygiene (regular washing, clean clothes and socks, take care of wounds)
- 4] ensure a sufficient and varied diet (fresh vegetables and fruit, not too much fat)
- 5] avoid an overloaded programme in relation to training, matches and school.
- 6] provide good accommodation, such as field, dressing rooms
- 7] check the use of good gear : shoes, shin protectors, mouth guard, tape bandage (ankles and head) and clothes.
- 8] watch "fair play" and the adherence to the rules.
- 9] initiate good warming-up, stretching exercises and cooling down.
- 10] good first aid kit e.g. the top teams kit.

## MOST AVOIDABLE INJURIES WITH YOUTH

\* Acute injuries:

- |  |              |  |
|--|--------------|--|
| 1] cut/scrape  | → First Aid: | cleanse with water and soap,<br>iodine and sterile bandage.                |
| 2] sprain/twisting<br><i>painful swelling</i><br><i>can just stand on it</i>               | → First Aid: | stop with the game<br>compress, rest and crutches<br>GP and maybe hospital |
| 3] muscle injury   | → First Aid: | stop with match<br>pressing bandage and rest                               |
| 4] bone<br><i>painful swelling</i><br><i>abnormal position</i><br><i>can't stand on it</i> | → First Aid: | leg/arm splint or fixed<br>to casualty at hospital                         |
| 5] nose bleed  | → First Aid: | good blow and sit down<br>catch blood with paper tissue<br>press nostril   |
| 6] concussion<br><i>short unconsciousness</i><br><i>SHORT LOSS OF MEMORY</i>               | → First Aid: | stop with match<br>compulsory rest for 1-2 weeks<br>possible bed rest      |

\* Chronical (strain) injury :

- 1] tiredness breakage (stress fracture)
- 2] growth disc intervention (Osgood Schlatter)
- 3] bone/cartilage deviation (Osteochondritis)
- 4] tendon inflammation
- 5] mucous membrane inflammation
- 6] lower back complaints (spondylolysis)

→ treatment: relative rest, remain agility and power.