

INJURY PREVENTION IN TEAM SPORTS - A SURVEY OF EXISTENCE AND SHAPE

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Abstract

Background: Physical activity is important at any age but unfortunately sports results in a lot of damages. 15% of all recorded injuries at emergency departments in Sweden are sports injuries the most common injury amongst children under 16 year. Many studies have been conducted to investigate how best to avoid sports injuries, but the question is whether this knowledge translated into practice in sports clubs.

Aim: The purpose of this study is to investigate the incidence and degree of injury prevention in various team sports (football, handball, ice hockey and floor ball). In addition, it aims to describe the prevalence of injury prevention among different ages and genders.

Method: Questionnaire survey in spring 2010. The questionnaire was self-developed and the study group consisted of 42 teams in ice hockey, football, handball and floor ball. The teams was established in Skåne and the age range of the teams ranged from 12 years up to the senior teams.

Results: The results showed that injury prevention is used in football, handball, ice hockey and floor ball, but to varying degrees. Heating and stretching before or after training and matches was used frequently by all teams in all sports. Other prevention measures differed between the different sports. Football and handball focused mainly on stretching and strength training, and jumping and landing exercises in handball. Floor ball had generally lower averages in the majority of the areas, but its results in stability training was relatively high. Ice hockey teams had the highest averages in general and focused mainly on stretching and balance training. Mental training, jumping and landing training, balance training and stability training was used to a small extent. Senior teams used the injury prevention more than the youth teams. The difference between the sexes could be mainly seen among the youth teams. 57 % of the teams had cooperation with medical professionals and in 21% of those teams, this person had any part in the injury prevention training.

Conclusion: Injury prevention is used by the sports clubs, but not as much. This is despite the high injury rate and despite several studies that have investigated and determined appropriate preventive measures. Comparison of the results was complicated because the response alternatives in the survey and the absence of teams with girls in ice hockey. But the results that the study shows were that ice hockey was the sport that used the most injury prevention, and there was a clear difference between the senior and youth teams. The difference between boys and girls were mainly seen in the youth teams where guys and girls focused on different areas. The majority of the coaches who participated in the study had some kind of trainer education, and we therefore believe that education about the injuries and its prevention should be included at the start of training steps.

KEYWORDS: HANDBALL. SPORT INJURIES. TRAINING. PREVENTION

1. INTRODUCTION

Regular physical activity is clearly important for all age groups. Whatever the reasons for an active lifestyle is fun, social cohesion or competition aspect, he knows that

The health benefits are many. Physical and mental satisfaction, increased stress resistance, increased self-confidence, height living age and reduced risk of several diseases are just some of health benefits associated with physical activity [1, 2].

But unfortunately, sportsmen also involve the risk of musculoskeletal injuries and acute injuries that can provide sequel. Sports injuries account for about 16% of all recorded injuries in emergency departments in Sweden and for children under 16 years is the sport most common cause of damage [3]. All injuries are not serious but in contact sports such as football and handball occurs alarmingly many serious injuries such as anterior cruciate ligament injuries. These injuries can then become a problem not only for the individual athlete, but also from an economic perspective, because the damage requires care and can even lead to long absence from work [4].

Many sports injuries can be prevented [4]. In order to know how the injury should be treated and also how it can be prevented, it is important to know the causes and risk factors that can lead to an injury.

The risk factors can be divided into an inner group (individual risks) and an outer group (environmental hazards). Age, gender, previous injuries, fitness, body size, inadequate rehabilitation, mobility, muscle strength, anatomical abnormalities and psychological.

The risk factors in both the inner and outer group can seldom alone cause an injury, but together these factors contribute to exposing the athlete to injury [4].

Often included in injury prevention are: heating, stretching, taping / safety, protective equipment, proper equipment, appropriate evidence, appropriate training schedules, adequate rehabilitation after injuries, psychology and nutrition [5].

A number of risk factors and sports injuries can be influenced by loss prevention training. There are a lot of custom-designed prevention programs can be used. These programs must be cost effective, simple, and be valid during each workout to be easily accessible to all clubs and teams. Many studies have been conducted to evaluate different types of prevention programs and training schedules [10-16].

The aim of this study is to investigate the prevalence and severity of injury prevention in various team sports (football, handball, ice hockey, and floor ball). Second, the purpose of describing the incidence of injury prevention among different ages and genders.

Research questions used injury prevention in football, handball, ice hockey, and floor ball. Is there any difference in the choice of intervention programs among the various sports? What is the incidence of injury prevention in the age groups of youth and seniors? Is there a difference between Injury Prevention in female and male athletes? Are medical personnel available and performs that in this case Injury Prevention?

2. METHOD

This questionnaire was in spring 2012 as a cross-sectional study using a self-designed questionnaire. Based on the purpose of the study, developed questions designed a questionnaire.

This study was focused on examining the incidence of injury prevention in team sports. The survey was directed to four team sports where there is a lot of body contact: football, handball, ice hockey, and floor ball. They were active girls and boys from twelve years and up to the senior team, age, division of youth (12-15 years) and senior (16 -). The age range was chosen on the basis of Article studies demonstrated that children at the onset of puberty from about 12 years (girls) and 14 years (boys) has the fastest linear growth. The study showed that the active young people during this period are at greater risk of injury in skeletal bones growth zones which can lead to permanent injury in adulthood [8].

Senior group counted from 16 years because it is a common age to get up and train and play with the senior teams. This causes far greater training dose, tougher and more intense matches body contact, which may also increase the risk of injury such as overloading damage [9].

Table 1. The table shows the study group on the team level.

Teams	Senior teams (Men)	Junior teams (Boys)	Senior teams (women)	Junior teams (Girls)	Total
Football	1	6	1	2	10
Handball	2	3	2	2	9
Ice hockey	6	4	0	0	10
Innebandy	2	3	3	5	13
Total	11	16	6	9	42

42 teams participated in the survey. 60% (25 teams) were youth teams and the remaining teams (17 teams) was the senior teams. Among youth teams was 36% (9 teams) girl team and among senior teams was 35% (6 teams) women's team (Table1).

3. RESULTS

INCIDENCE OF INJURY PREVENTION IN FOOTBALL, HANDBALL, ICE HOCKEY AND INNEBANDY

Based on the questionnaire design can be inferred that injury prevention is used in football, handball, ice hockey and floor ball, but to varying degrees. Number of training differed between the different sports. Football Teams trained on average 2.5 times / week, handball teams 3.3 times / week, floor ball teams 2 times / week and ice hockey teams trained an average of 3.4 times / week. Of the 42 teams that participated in the questionnaire survey carried out all the teams warm up before each workout and these data are not presented in the figures. Stretching used an average of 2.4 times / week and was part of injury prevention used to the greatest extent in all of sports. Handball teams stretched the most times per week (3 times / week), while floor ball teams had the lowest number of times per week (1.9 times / week). 1.1 times / week, the mean for all sports for the use of strength training. Ice hockey teams were the teams who used strength training to the greatest extent (1.6 times / week) and the remaining sports had a value between 0.6 to 1.1 times / week. Balance training was used to a lesser extent, and the mean between sports was 0.9 times / week. floor ball teams used it only 0.3 times / week, while ice hockey teams used it seven times as often (2.1 times / week). Endurance training (long distance) was used in the average 0.7 times / week. 1 times / week, the mean among handball teams. Ice hockey teams used the endurance training half as often as handball teams (0.5 times / week) and floor ball teams mean fitness was 0.3 times / week. Mental training was the main factor in injury prevention, which had the lowest average in sports (0.5 times / week). Use of jumping and landing training differed greatly between the various sports. Handball teams had a mean of 2.4 times / week, while the remaining teams' average was 0.4 times / week. Stability training is used on average 0.9 times / week in all teams. Taping foot and knee pads were used by 69% (29 teams) of all teams. In 60% of the teams that used the taping was performed taping of the coach or assistant. Other tapes were performed by the players themselves, parents, materials manager or medical support.

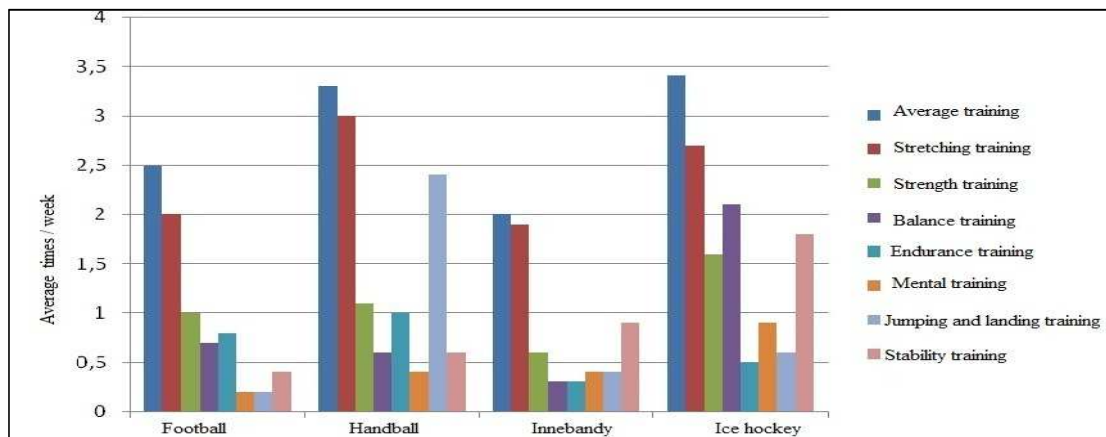


Figure 1. The figure shows the prevalence of various factors analyzed in injury prevention.

CHOICE OF PREVENTION PROGRAMS

There are differences in the choice of intervention programs among the various sports. The football teams focused primarily on stretching (2 times / week) and strength (1 times / week). Stretching (3 times / week), jumping and landing training (2.4 times / week) and strength (1.1 times / week) were the areas that were focused on the handball teams. floor ball teams had generally lower mean values of all factors in injury prevention and the highest values were found in the stretching (1.9 times / week) and stability training (0.9 times / week). Ice hockey team had the highest averages in many areas in addition to aerobic training, stretching and jumping and landing training where handball had higher values. The focus was mainly on stretching (2.7 times / week) and balance training (2.1 times / week) (Figure 1).

Within the teams that used the stability training is focused on different parts of the body. 77% (10 teams) of floor ball teams focusing on knee stability. 54% (7 teams) of the floor ball teams are focused on foot stability and 23% (3 teams) training back stability. The football teams will focus 50% (5 teams) on foot stability, 10% (1 team) also trains back stability. 56% (5 teams) of handball teams focusing on shoulder stability, 67% (6 teams) focuses on foot stability and 56% (5 teams) are training your knees up under her stability training. Ice hockey teams focuses primarily on back stability which 40% (4 teams) use. 20% (2 teams) are training knee stability while fully 50% (5 teams) did not specify which type of stability training is used.

54% of the teams said that stability training was conducted throughout the year, while 37% performed the stability training only during the preseason. 27% of the youth teams performed stability training all year and 53% said that it is only performed during the preseason. 54% of the youth teams focused their stability training on the feet and knees. The senior teams were used stability training throughout the year by 80% of the teams and the remaining teams (20%) had stability training during the preseason.

PREVENTION

Junior teams trained an average of 2.2 times / week. At 77% (1.7 times / week) of these training were performed stretching, at 50% of training conducted strength training and 23% of the training included endurance training. Balance training, jumping and landing training and stability training was conducted at 18% of training. Senior teams trained an average of 3.5 times / week. Stretching was performed at 80% of these trainings and 83% of training included strength training.

The balance training was conducted at 34% of training sessions were carried out and conditioning at 20% of the training instances. 40% of the training sessions included jumping and landing training and stability training. Mental training is performed more than twice as often among senior teams than among the junior teams (Figure 2).

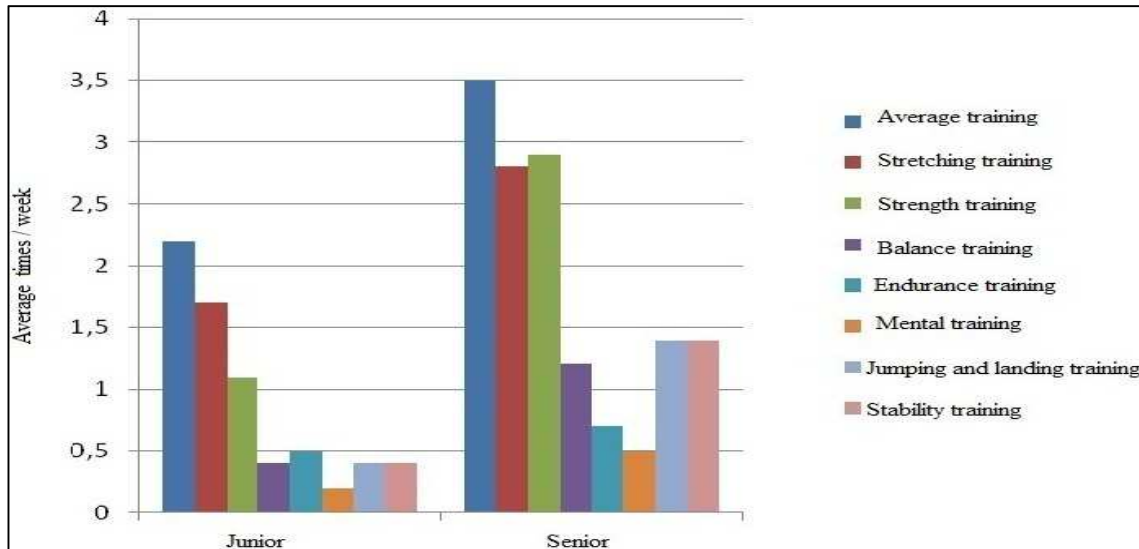
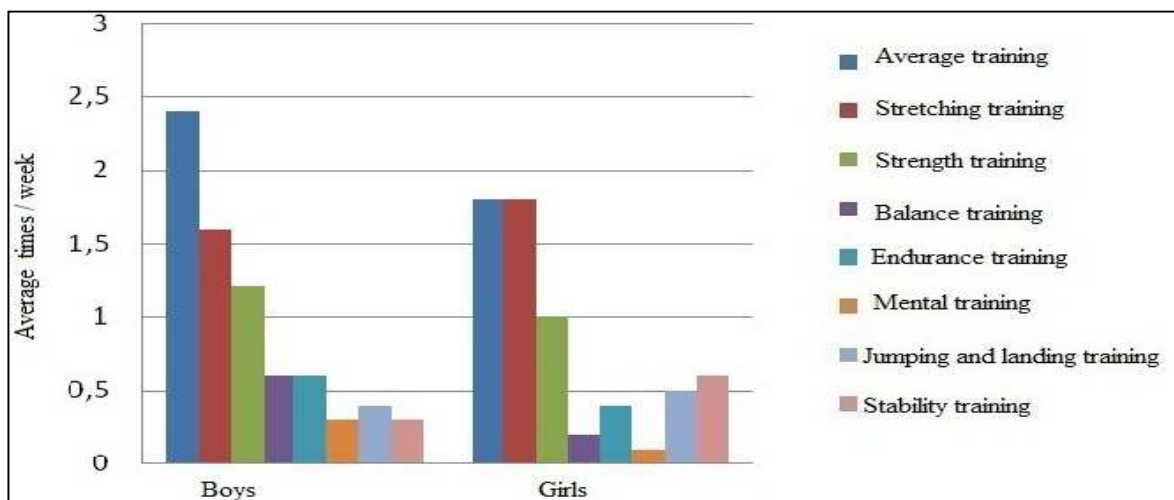


Figure 2. Shows the prevalence of various factors in injury prevention. The results are divided into junior and senior teams.

INDICES OF INJURY PREVENTION IN MEN AND WOMEN AND WOMEN

Among junior used stretching slightly more often among girls than among boys teams collagen (1.8 and 1.6 times / week). Jumping and landing training and stability training was also used more frequently among girls teams. The remaining factors (strength training, balance training, endurance training and mental training) that research showed higher values of boys agents compared with girls teams from junior teams. The guys trained an average of 2.4 times / week and girls 1.8 times / week (Figure 3).



Figur 3. Figuren visar förekomsten av skadeprevention uppdelat på killar och tjejer inom juniorslagen.

Senior of the teams results showed that men's teams made use of balance training twice as often as women's teams (1.6 and 0.8 times / week). Strength is used, however a greater extent in women's teams (3 and 2.8 times /

week). Other areas were similar when the differences were only 0.1 times / week between men's and women's teams. The boys trained an average of 3.7 times / week and the girls 2.8 times / week (Figure 4).

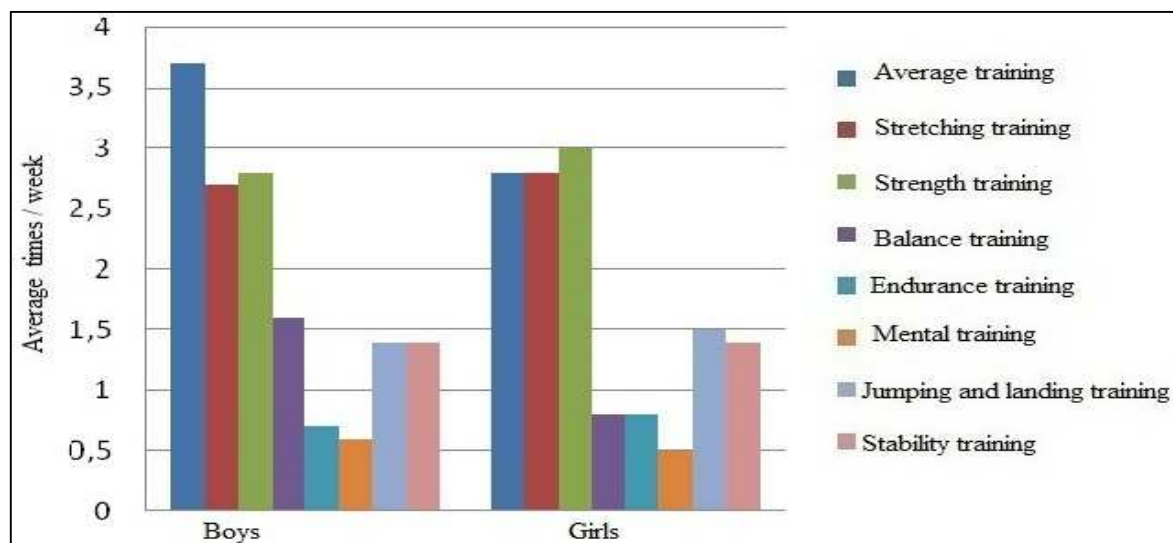


Figure 4. The figure shows the incidence of injury prevention divided into boys and girls in the senior teams.

THE PRESENCE OF MEDICAL PERSONNEL

57% (24 teams) of all teams have cooperation with any medical professionals. In 21% (5 teams) of these teams is the medically trained personnel responsible for any part of the injury prevention training. Of junior teams had 28% (7 teams) collaboration with health professionals but only 14% of these seven teams were medical personnel who were responsible for some part of the injury prevention training. The medically trained personnel were either doctor or physiotherapist.

In 67% (28 teams) of the teams took coach or assistant coach after an injury in the acute phase, while 26% (11 teams) stated that a medically trained personnel took care of the damage.

Information on injuries and injury prevention training to the players were present in 31% (13 teams) of the teams. Among junior teams had 24% of the teams received information and 41% of the senior teams had been informed.

Of the 42 respondents teams had 74% (31 teams) coaches who have undergone some form of trainer. Among junior teams, 80% of the coaches training and 65% of senior teams coach had been coaching.

RESULT DISCUSSION

Our first research question examined whether injury prevention is used in the various sports. Since we have chosen to compile the results in the number of times a week (because the questionnaire design), it was difficult to compare results. We therefore decided to specify the number of exercise sessions per week to get a little more oversight. A comparison between sports and genders was also difficult to perform when, for example, did not attend any girl teams in ice hockey. We chose nonetheless to include results from ice hockey teams because we felt that the results were interesting to compare.

Something that was not so surprising was that all teams had warm up before training and matches.

Stretching was also a frequent moments, but there were differences in when the stretch was performed which we believe may be due to the trainer's knowledge and / or accidents in the training set-up. Other factors in the injury prevention which we examined were used in very varying degrees, depending on the sport and the age which the teams found themselves in. Over teams were mental training, jumping and landing training, balance training and stability training components that were included to a lesser extent than other injury prevention factors.

We believe that one reason for this may be that the coaches choose not to include these elements because of lack of knowledge. Strength training did not occur as frequently as we thought it would do and perhaps why it is that coaches do not expect small weight lifting elements (such as push-ups that may appear as "punishment" for failure to exercise) included in the training that pure strength training. Endurance long distance also used it less often than we predicted and we believe it can be a problem when cardio should include these elements.

Floor ball teams had low levels across the board, which was surprising given that floor ball is a relatively injury affected sports. Perhaps the low values is partly explained by the fact that many junior participated in the study (161 of 254 participating floor ball players were under 16 years) and injury prevention begins, unfortunately often at higher ages. The low values can also be explained by the floor ball was the sport that the team trained a minimum number of hours per week. The areas that were used most frequently in floor ball teams were stretching and stability training. The football teams also had the low levels in some areas. They mainly focused on stretching and strength training while the mental training, jumping and landing training and stability training is used more often. Given how large and widespread sport football [11], one might think that they should be better trained in areas such as injury prevention.

Ice hockey was the sport that had maximum values in total within injury prevention which was gratifying, as ice hockey is a very harmful affected sport with an injury incidence rate of 29-79 injuries per 1000 match hours [4]. We believe however that an explanation for the high values may be the elite men's team that participated in the study. They had training 20 hours / week and used a lot out of injury prevention efforts and thereby increased the mean value significantly in all areas. Another explanation may also have other hockey team also trained an average of more times a week compared to other sports. Ice hockey was the sport that had a maximum value of balance training.

Perhaps this could be because it requires a good balance of being a good skater and simultaneously receive tackles and therefore put much energy to train the right balance.

Jumping and landing training was not surprisingly a large part of training within handball teams. It is also a very important part because much of the injury which occurs in handball is the anterior cruciate ligament injury [12]. The endurance and strength training you could see relatively high performance in handball which is considered positive.

The question of when stability training used only answered 54% of the teams that was used throughout the year and 27% replied that they have stability training during the preseason. These low numbers can be interpreted as if there is insufficient knowledge about the effect of the stability training does not persist throughout the season. We also reacted to 53% of the junior teams respond that they only use during pre-season which means that a follow-up question should have been the length of a pre-season is for boys and girls of 12-16 years old.

In the results to the question about the existence of injury prevention in junior and senior teams, we decided to again specify how many training they have, on average, to compare them equally. Despite studies that have demonstrated an increase of overload injuries among children and adolescents [9], one can see a clear difference between youth and senior teams. Junior teams have lower results in all areas of injury prevention and the biggest difference can be seen in the balance, stability, jumping and landing training and mental training. These areas were trained only for 18% of training instances in the junior teams. The above-mentioned study also mentions the importance of avoiding stress and heavy loads at an early age and therefore it trouble us that several of the men's and women's teams in different sports have players with such a low age of 12-13 years. The risk is that sports injuries is increasing for these players because they may not be physically ready to play at that level, they apparently do.

Women and men have different body structure and have therefore not the same risk of sports injuries.

Women seem more prone to injury than men, which, among other things to see in a study of football injuries [7]. We would therefore like to see an equal if not greater injury prevention activities around girls teams compared with boys teams, although our study did not show. We chose to split the results in junior and senior team to see if there was any difference. Within the junior teams used the girls themselves by stretching, stability training and jumping and landing training in little more than boy's teams. Strength, balance, fitness and mental training, however, showed a higher value of boys agents compared with girls' teams. Among senior teams could see a significant

difference in balance training as the men used this in twice as much as the ladies. This value we believe can be explained by men's teams of teams trained more times a week and that the elite teams that participated in the study was a men's team. In other areas, the results were basically similar.

The question of whether there were any medical personnel connected to the team we were up to 57% of the teams had relationship with any medical personnel. In only 21% of these teams had this staff responsibility for any part of the injury prevention training, which we thought was a too low number. We could not deduce how medical skills are used. This would be further study may be able to answer option that consultative role in the training planning and / or in emergency injury. We believe that more teams should take advantage of the expertise of the medical staff actually sit inside.

4. CONCLUSION

In this study it was found that injury prevention occurs, but not so much out there in sports. This despite the fact that many sports injuries are still made in contact sports floor ball, ice hockey, handball and football, and although other studies have been conducted to investigate and determine the best possible preventive measures. Comparisons of the results was complicated because of the answer choices in the questionnaire and the absence of girls teams in ice hockey. There you could see was that ice hockey was the sport that used the most injury prevention, and there was a clear distinction between senior and junior on the issue. The difference between boys and girls were mainly seen in junior where men had more strength, balance, endurance, and mental training while girls teams focused more on stretching, stability and jumping and landing training. This conclusion cannot be generalized across the voluntary sector because of the small facts, but conclusions can only be generalized to our study group.

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