OFF-ICE TRAINING FOR MINOR HOCKEY
SAFETY AND PROGRESSIONS YOU SHOULD BE CONCERNED ABOUT

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Sports activities account for a large number and substantial proportion of all injuries to children and youth. Most of these occur in the lower body, with adolescents incurring greater percentages as compared to younger children, with peak rates occurring in the 15-16 year old age group. The long term effects of sports injuries, specifically the knee and ankle, may cause early development of osteoarthritis. Research has shown that deficits in postural control and muscle strength are the largest risk factors for injuries. Strength deficits in particular may cause muscle imbalance in co-contraction requirements, resulting in the inability of the knee and ankle to stabilize effectively during sports movements. This article will provide some examples as to the direction that you should consider as it relates to off-ice training for youth, and practices you should avoid.

Off-ice training for hockey is a topic that is spoken of often at this time of year, as teams go into the planning phase for their hockey season. With over 20 years in hockey training, I for one, know this area has changed greatly over the years even at the NHL level.

My first year with the St. Louis Blues was an interesting one. Jacques Martin was into his second year as an NHL head coach, and he was determined to change the way his team prepared and worked during the hockey season. Having brought me in as the expert at the time, I was only the 3rd strength coach ever in the NHL. Back then the Blues weight room was 800 square feet filled with ancient weight training equipment that some gyms never wanted. Yet I was tasked with helping develop their conditioning level and also maintaining that level through the season. The previous year the Blues had

the worst record in the NHL for man games lost to injury at 765. Most of those were soft tissue injuries and potentially preventable.

In developing the program, my main goal was to maintain strength levels that would assist in protecting joints. I will talk more on this later in the article. I was successful in that year as we were able to cut our man games down to less than 300, which resulted in a healthier team able to compete and costs saved on bringing in healthy players from the farm team.

Off-ice training today seems to have changed significantly over the last 25 years. In my opinion many of these changes have been detrimental to the development of young players, as the training itself has created a rash of new injuries. Young players today are experiencing more knee, back, and shoulder injuries than they have before. This is directly related to the type and volume of training that younger kids are participating in today.

One of the most fundamental characteristics of physical training is learning proper movement patterns, especially for young kids. These movement patterns include: running, jumping, squatting, pressing, twisting, throwing, stepping and lunging. There are logical learning curves for all of these movement patterns, and when not followed in a logical order, improper movement patterns become a learned response in the child, with the end result being an injury to soft tissue or bone.

If you click on the link below, you will see a short video of a typical off ice workout. There are many different movements, kids having fun, and significant examples of poor movement patterns.

http://youtu.be/tdHMyt3PlkQ

This is the type of work you want to avoid for your team. Team workouts for young kids should focus on exercises that they can execute with perfect form and technique. This lends itself to a safe training environment and will set up the athlete for more progressive exercises as they age. This is an important point as the exercises that a 12 year old would complete is totally different from what a 16 year old might do. I have personally broken down my workouts for youth in the following age groups 12-13, 14-15, and 16-18.

Coaches and parents should be leery of strength coaches who promote advanced workouts that look good on first view, but in reality are contraindicated for youth training.

Here is another example of a group of youth athletes swinging a kettlebell. The kettlebell is a great tool for developing power, but not for this age group. Note the movement faults during the slow motion video.

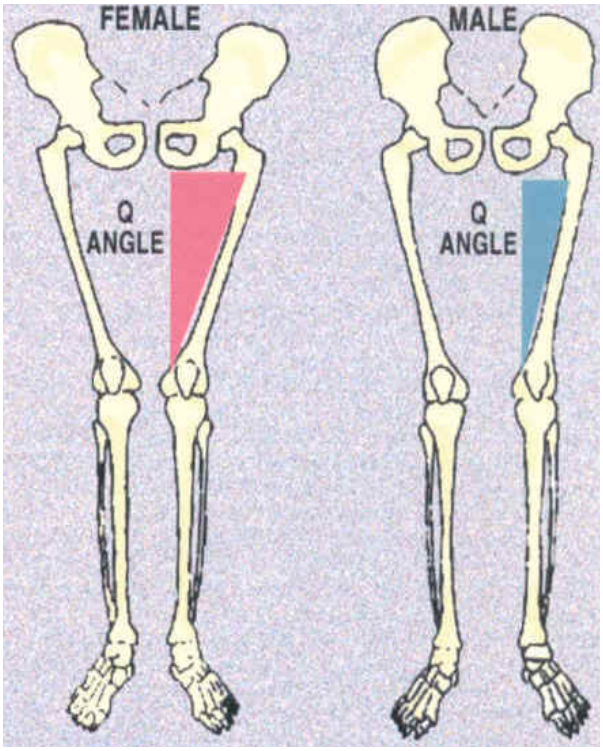
http://youtu.be/Aw9exZ0lhe4

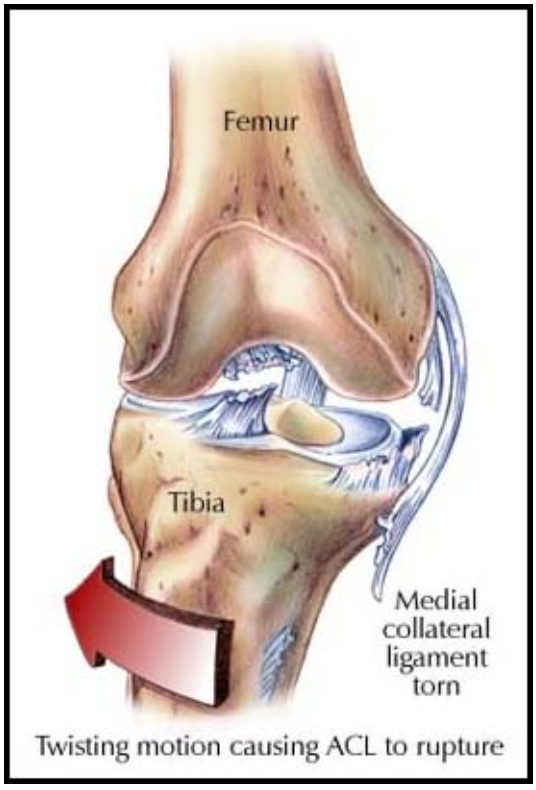
You can easily see these kids have a hard time with the tracking of their knees, poor thoracic posture to support the arm swing, and poor core strength. This can only lead to upper/lower back issues as well as problems for the shoulder.

In the above 2 examples I have pointed out problems with off-ice training. I am sure some of you might be wondering what would the alternative be? One of the most important physical characteristics that are necessary in hockey is the ability to change direction. This requires the ability to decelerate and accelerate in a very short period of time. An example of this might be a hard forechecking forward in the offensive zone. As he skates hard to his man with the puck, the puck may get passed off quickly, requiring a very quick stop, or hard turn, followed by a quick skate to ensure he stays in the play. To do this the player requires great eccentric strength, or the ability of the muscles to lengthen under load, followed by explosive muscle shortening to get after the puck. For many off ice drills, coaches would use plyometric type of exercises to replicate this, such as in my first video example. The issues arise as in the video, these young kids cannot handle the body weight loads of jumping. The appropriate exercise to work on this quality would be a jump and stick. In this movement, the player jumps up, and lands in an athletic position. By using this type of exercise, the athlete learns to handle his body weight, land properly, and reinforce proper mechanics.

The picture at right was taken from the Allstate All-Canadians Camp in Toronto this past August. http://allstate.all-canadians.com/Default These kids were the top 14 year olds from across the country. The drill they are working on is an advance move from what I described before. This is a jump with a 180 degree turn with a land and stick. As you can see the 3rd player from the right has nailed it perfectly. Good athletic landing, back in great posture with hips and knees in athletic stance.

I have mentioned the knees quite a bit in this article, and from a biomechanical and anatomical perspective it is something you should be concerned about. The poor motor patterns that your child may be learning may in fact have an impact on not only their hockey performance, but also their joint health as they age. As demonstrated in the video examples, those children's knees are coming together on jumping and landing. If the knee cap does not track properly you end up eventually grating your cartilage down along with creating muscle dysfunction. The following pictures will be helpful in explaining this.





The picture on the left demonstrates the Q angle in the knee between males and females. The Q angle is the angle formed by a line drawn from the front of the pelvis to the patella and a second line drawn from the patella to tibial tubercle. An increased Q angle is a risk factor for patellar subluxations, ACL ruptures during pivoting movements, and potential problems with the hip. The next picture is typical of a 15 year old hockey player:

As you can see during this simple assessment of squat technique we can determine there are **numerous** joint faults, but the most prolific would be medial movement of the knee joint. This is common in young teenage boys and a reason why the use of plyometrics demands to be age and ability appropriate. The picture to the right is what the assessment should look like.

In-Season Training What To Do?

As I mentioned at the very beginning of this article, my goal in developing an in-season training program is to focus on those physical characteristics that do not get worked on effectively on the ice. That component is strength. Strength is the physical characteristic that decreases the greatest when we stop performing strength training exercise. Skating, riding a bike, or running on the treadmill do not have any effect on strength maintenance. Nor for that matter does running through an agility ladder, hurdle jumps, or agility drills. The only way to maintain strength, and thereby ensuring your joints are strong is to continue lifting weights during the season.

Ironically, what we typically see in off-ice work is drills made up primarily of plyometrics. This is the wrong focus for kids in minor hockey. They will get enough agility; speed and quickness work on the ice at this time of year, and this

is their sport specific training. But the only way to keep their strength and joints strong and stable is by lifting weights.

To keep young players strength level optimal 1-2 sessions per week of 30-45 minutes is all that is necessary. Pick exercises that are fundamentally appropriate for the age group. No more than 5-8 exercises are necessary depending on the number of days per week they are able to get in the gym.

In the NHL and OHL each team has their own well-equipped strength training room, so access for players is easy, and pro coaches know that they plan lifting workouts into their team schedule. Pro coaches also realize that if they take a day off the ice for a gym workout, the players will not forget how to skate and most view it as part of the total program.

Effective in-season strength training can go a long way at keeping young players strong, healthy and continue to re-enforce proper movement patterns. Plan it right for success and remember…..THERE IS NO SUBSTITUTE FOR STRENGTH, AND NO EXCUSE FOR A LACK OF IT!

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