



Core

What is it?

Many athletes think of core muscles as the abdominals or “six-pack” - your core actually includes many of the trunk muscles that attach to the spine and pelvis including the abdominals, obliques, back stabilizers and psoas. The core muscles help to create stability for extremity muscles that provide movement.

Why it's important

Core strength is essential in all aspects of skating performance for creating or supporting posture, speed, acceleration, jump landings and takeoffs, and also to prevent all forms of injury around the lower back area. A stable and strong core allows the rest of the muscles in the area to work more efficiently and together.

Core stability is critical when rehabilitating injuries especially those related to low back pain, SI pain and other connected areas including hamstrings, groin, and shoulders.

Strength and power training

Core strength and stability are typically developed together - one can't be strong without being stable between muscle groups and stability relies on strength in each part of the core.

Core power refers not only to power development within the core muscles but also how the core provides a stable base for the power generating muscles of the hips, legs, back and shoulders.

- ★ V-ups
- ★ Bird dogs
- ★ Dynamic rotations with resistance

Stability and proprioception training

Stability can be trained both dynamically (moving) and through static exercises such as bridges and planks.

Training the positional sense of your core will help you with jump landings, movement and expression.

- ★ Front/side planks
- ★ Postural and dance exercises, like those in ballet positions
- ★ Balancing on an unstable surface

Posterior Chain

What is it?

The term posterior chain refers to the series of muscles that include the low back, the glutes, the hamstrings, and even the calf muscles. In skating, these muscles are responsible for generating forward propulsion (stroking) and tremendous jump power, but are equally important for decelerating jump landings and absorbing impact forces. Individual muscles in the chain must be strong enough to transfer force through the chain.

A strong and coordinated posterior chain relies upon and contributes to a strong core.

Why it's important

Both strength and flexibility in your posterior chain muscles (your hamstrings are a good example) are critical for performance and injury prevention. The low back is constantly challenged by repeated impact from jump landings and in flexibility movements in spins and lifts, and a strong posterior chain helps to buffer these forces.

Recognizing this area as a chain will help you realize that the chain is only as strong as its weakest 'link' - so exercises training muscles from the low back through the glute to the calf are all important.

Strength and power training

Posterior chain exercises involve activating the muscles on the posterior side of the leg in a chainlike manner. You will see the best strength gains in this region of the body from working these muscles both in isolation and together as a static and dynamic chain.

It's important to create a base of muscular strength prior to working on explosive power and speed. Developing controlled deceleration is as important as propulsion, if not more so, as this will assist with jump landings and reduce impact forces on the spine.

- ★ Single leg deadlifts
- ★ Bird feeders
- ★ Glute bridges

Stability and proprioception training

When you land a jump, demonstrate strong posture over an edge, or lift a partner, your posterior chain must be stable and positionally aware. Deceleration exercises, also known as eccentric contractions, are critical for helping you land softly and with control while resisting injury related to repeated impact.

- ★ Supermans
- ★ Depth landings
- ★ Step-downs

Foot and Ankle

What is it?

Your lower leg muscles help point, rotate, and pull up (dorsiflex) the foot, and curl and straighten the toes. Intrinsic foot muscles help stabilize the foot and move the toes. Mechanical foot and ankle stability relies on the strength of the tendons, bones, and connective tissues.

Ankle exercises are commonly overlooked especially given the tendency of skaters to wear stiff boots to create external stability - boot stiffness can be both a benefit and a liability leading to weak joints and injury related to weakness and imbalance.

Why it's important

In skating, foot and ankle strength and stability is critical for jump take-offs and landings, turns and edges, and supporting proper technique that transmits up the posterior chain to the core.

Dynamic ankle stability comes from the strength of the muscle, tendon, and connective tissue in the foot and ankle, as well as from training neuromuscular control. Both are necessary to optimally stabilize the ankle - each part relies heavily on the other.

Keeping these muscles strong can relieve foot and ankle pain and prevent injury, while creating a stable platform to push and jump off of and to stabilize jump landings.

Strength and power training

Often, skaters replicate too many power and impact movements (like off-ice jumping) immediately after doing high numbers of on-ice impact when stability and strength exercises would provide superior benefits and support jumping on the ice.

Foot and ankle strengthening should include the muscles of the calf, lower calf, shin, and stretching and strengthening the supporting ligaments of the ankle and foot.

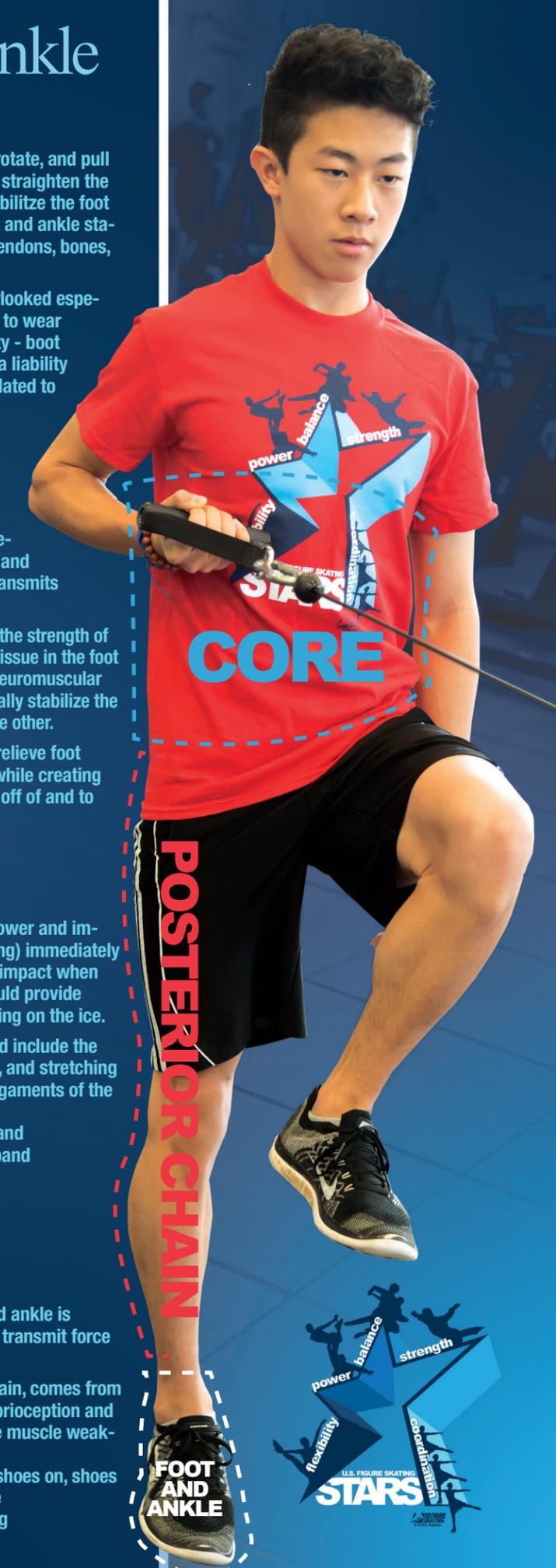
- ★ Flexion/extension resistance band
- ★ Inversion/eversion resistance band
- ★ Pencil jumps

Stability and proprioception training

Positional awareness in the foot and ankle is critical for technique, edges, and to transmit force properly into the ice.

Instability, which leads to ankle sprain, comes from either functional reasons (poor proprioception and control), or mechanical reasons like muscle weakness and ligament laxity.

- ★ One foot balance progression: shoes on, shoes off, stable surface, unstable surface
- ★ Skipping, bounding, and jogging



Athleticism Comes in All Shapes and Sizes



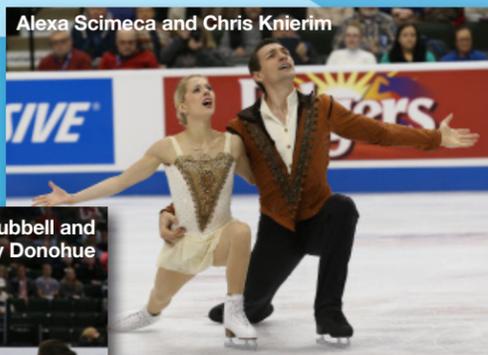
Mirai Nagasu 2008



Mirai Nagasu 2016



The Haydenettes



Alexa Scimeca and Chris Knierim



Evan Lysacek



Madison Hubbell and Zachary Donohue



1 Normal developmental changes can impact athlete performance and these changes may occur rapidly at times.

2 Young athletes should expect to see gradual increases in physical athletic performance both on and off the ice during childhood and adolescence.

3 Off-ice training and nutrition needs to be adjusted appropriately as the athlete grows and becomes more skilled. Children are not small adults and training should be appropriate for age and level.

4 Injury is a particular concern during growth spurts.

5 Many factors contribute to the causes and prevention of injuries, including type and amount of training, technique, nutrition status, and recovery.

6 It is important for parents, coaches and trainers to message to the athlete that changes in growth and development are normal, programmed largely genetics, and you don't get to choose the order in which they occur.

7 While you can't alter your genetics, you can change your athleticism through training and fueling.

What is Athleticism?

Athleticism is your ability to use your physical skills and attributes in performance.

- ★ Different types of athletes will develop athletic qualities most relevant to their sport.
- ★ Specific aspects of athleticism are more relevant for various skills and sports. For example, a marathoner needs to have great endurance, a wrestler strength, power, agility and anaerobic capacity, while a pole vaulter needs explosive acceleration, upper body and core strength.

What are some **physical aspects** of athleticism?

What are some **mental skills** that would support athletic performance?



How does athleticism support on-ice skills?

- Being a great **athlete** does not automatically make you a great **skater**, but great skaters are typically great athletes.
- Developing **athleticism** specific to on-ice skills will help you train and compete better, reduce the risk of injury, and master new skills more quickly.
- Around the outline of each star to the left, write the athletic abilities you think are most important for executing the on-ice skill(s) written.

What do your S.T.A.R.S. results tell you about your athleticism?

- S.T.A.R.S. measures your athletic abilities in a standardized way using tests that have been proven valid and reliable in scientific literature.
- By participating in S.T.A.R.S. annually, you can track your **athleticism** as you grow and develop more skills.
- You can also compare your S.T.A.R.S. results to other athletes of your same test level, age, and gender to see how you score within your peer group.

Adjust your training to change your athleticism!

- Work with your coach and off-ice trainer to use your S.T.A.R.S. results to identify the areas in which you need to improve your **athleticism**.
- Don't forget to continue to maintain strengths as you address deficiencies.
- Remember the key points of **Core, Posterior Chain, and Foot and Ankle**.