SKI EASY

Co-funded by the Erasmus+ Programme of the European Union

CHILDREN ARE NOT MINI-ADULTS

15 Facts, Myths and Truths to Repeat!

1. Grandma said that children should wear a CAP

THAT IS ACTUALLY TRUE!

Head to body size ratio in children is much larger than in adults. As we lose almost 25% of body heat through the skin's blood vessels on our head, it is advisable that children keep their head covered when cold, even when not skiing, e.g. during the breaks

When outside temperature is -4°C, children can lose up to 50% of heat through their head.

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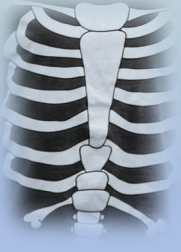
2. Children are „elastic” and will not BREAK BONES

THAT IS A MYTH!

Children’s skeleton has more cartilage and collagen. Their bones do deflect more, but have a lower bending strength. So, their bones are „weaker”. Their bones have lower ability to sustain forces and can bear less.

The rate and frequency of lower extremity fractures is much higher in children than in adolescents, especially under the age of 7 !



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3. Children do not adapt well to sun and UV radiation!

THAT IS TRUE!

Children have thinner skin (especially epidermis) which provides less protection, and they produce less melanin, so they have a higher risk of sunburn. Sun protection for children should be against UVA and UVB rays and a minimum of SPF30 applied every 2 hours. Also, their eyes are more sensitive and they should wear **sunglasses** form an early age on.

VERY IMPORTANT: sun damages accumulate!

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4. Children should not do strength training and carry loads?

THAT IS A MYTH!

Loading the children with **ski equipment** will not do harm to their growing bones and cause epiphyseal fractures.

It is proven that children can demonstrate significant gains in muscle strength with resistance training (13 - 30%)

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5. Children HEAT up and COOL down faster than adults

THAT IS TRUE!

- Children have a **higher surface area-to-body mass ratio**, diminished sweating capacity, lower muscle mass and a higher metabolic heat production during exercise
- they might start to shiver and feel cold much sooner than adults and may „overheat" sooner.
- shivering in children is not so effective as their muscle mass is low
- more layers of clothes , which may be added or removed as needed are a better option compared to one extremely thick or thin ski-overall

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6. Children will OVERTRAIN, so they should exercise less

THAT IS A MYTH!

Children have lower anaerobic power and a 2- to 3-fold lower blood lactate concentration after exercise when compared with adults but **equal activity of aerobic** endurance energy pathways!

It seems that overtraining in children would happen more often psychologically and there is no reason to copy the training process of adult athletes. So, if a child wants to ski, they should be encouraged to do so!

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7. Children do not adapt well to fog!

THAT IS TRUE!

Children and adolescents tend to develop motion sickness (*„ski sickness" or Hausler disease*) in fog more often. Sight disturbances (astigmatism and shortsightedness) are major risk factors.

Ski teachers should closely look for signs of disorientation, visual disturbances and dizziness, especially if accompanied by fear.

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8. Children do not adapt well to altitude!

THAT IS HALF TRUE!

It seems that some children adapt to high altitude with more problems and higher occurrence of acute mountain sickness, especially when they are younger than 13y. Children do not realize hypoxia and will report early signs later.

Some proved that children had a higher risk of altitude sickness even when sleeping below 2000m.
Ski teachers should monitor for headache signs or nausea.

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9. Children, while skiing, always have to PEE?

THAT IS TRUE!

Well, not always but it IS quite common ☺
As altitude triggers mechanisms that lead to diuresis (peeing) and as children's bodies have more water, it is not surprising that even if they peed at a previous cable car station, you can always expect *„Ski teacher, I must go!"* again once you reached the top!

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10. Children will not get injured because they are short and „FALL FROM A LOW HEIGHT”

THAT IS A MYTH!

In proportion to the numbers of children on slopes they **DO** get injured very often.
In skiing, lower leg fractures are higher among children than among adults (32% vs. 18%). The peak of fractures is at the age of 4 to 7 in both genders, and again in teens for boys. Spiral fractures of the tibia predominate.

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11. GIRLS are weaker and skiing intensity should be adjusted”

THAT IS A MYTH!

- there is no underlying physiological reason for that until puberty
- the strength and endurance of boys and girls is essentially the same until puberty, the differences start to appear around the age of 11
- only post-puberty, strength is much higher for boys than for girls. By the age of 15 years, boys were around 12% stronger than girls in their lower body

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12. Dehydration might lead to injury

THAT IS TRUE!

Children's' bodies have more water content and losing 3% might lead to stress, induced by dehydration. Higher stress is related to higher cortisol levels and higher injury rates. Because of altitude diuresis (peeing) they are very susceptible to dehydration. The rule of ~~a~~ thumb for water intake is:

- **200ml of water or low carb isotonic drink before skiing**
- **150-200ml for each hour of skiing**
- ***ad libitum (freely)* after skiing**

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13. When buying boots leave room for their fast-growing feet

THAT IS A MYTH!

Non fitting boots are a major factor leading to lower leg fractures and sprains, especially among children.

The binding release function is compromised when feet do not firmly fit within the boot. Children have a greater risk of injuries and therefore need the best-fitting equipment.

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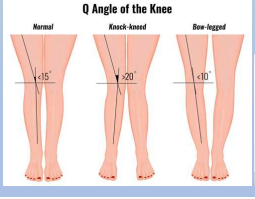
14. Girls generally ski with knocked–knees so we need to correct that?

IT IS TRUE BUT SHOULD WE CORRECT IT?!

Q-angle is an anatomical characteristic that is typically more pronounced in women than men, generally increasing with the width of the pelvis in (pre)puberty. Girls would often be seen in knock-kneed stance (or so called A shape calves), that lowers edge engagement, limits leg movement and contributes to skidding. Even though you may feel compelled to correct that position aggressively, note that in some cases it would be impossible. A wider stance helps.

Even some of the best female skiers would still hold an A shape but reach the good lower ski grip with compensational „hip dip". Boot adjustment may help but only at an early age!



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15. The best breakfast is cereals

THAT IS A MYTH!

There is a significantly higher sugar content in cereals advertised to children compared to generic cereals (on average 28 g in 664 analyzed brands, higher then *„popular black soda drink"*). Many have a high salt content and are even high in fat. Food with a high glycemic food index triggers a high insulin response and leads to a **strong hunger within only 2h**.

Try to include some protein (eggs, unsweetened yoghurt) or raw cereals for breakfast and then let them have carbohydrates for lunch to replenish glycogen stores in the muscles and liver.

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16. Diabetes and skiing do not mix well

THAT IS A MYTH!

Children with diabetes type 1 should ski but do talk to their parents and learn about the early signs of hypoglycemia. Learn about glucose monitoring and make sure the insulin (with or without pump) is placed in deeper pockets, so it does not freeze. Do not start a ski day without fast acting glucose tablets in your pocket (and child's pocket as well) and even consider emergency glucagone injections. Replenish carbohydrates during breaks.

Never let a diabetic child use a chairlift alone, especially not after a strenuous run. Keep in mind that hypoglycemia after physical activity may also occur overnight.

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17. Skiing with epilepsy is dangeourus

WELL, THAT MIGHT BE THE CASE!

Downhill skiing is categorized as a moderate risk for a child with epilepsy. A child who suffers from frequent attacks may really be at risk while skiing, especially when using ski lifts or ski near unprotected cliffs or canyons. No anticonvulsants guarantee a 100% freedom from seizures.

In case the child has been free from seizures for a long time and parents would like to enroll the child into ski school, talk to the ski school manager about protocols. In any case use a helmet and darker sunglasses as even bright light may provoke seizures. Avoid slopes with objects like trees and similar.

Cross country skiing is usually safer and a much recommended alternative.

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18. Obese children should not ski because of their joints

THAT IS A MYTH!

A lot of severely obese people ski pretty well. The problem might involve ski boots as sometimes those do not accommodate the size of the calf in obese children - so you would have to opt for a larger size. The loads are higher, but if the snow is not too hard and the slope is moderate, there is no special danger for joints if you choose long turns.

The problem may appear when skiing in a group as a heavy skier picks up more speed due to the downhill force. If their muscle mass is not developed speed control might become an issue. Use this to encourage and not to belittle them !

Longer skis might help to distribute mass for teenagers. Wide skis put more pressure on knees so advise a ski with narrow waist. If obese children sweat a lot, consider bringing a change of clothes (baselayer shirt).

BMI !!!

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19. Children just copy us - so do not waste time explaining

THERE IS SOME TRUTH TO IT!

At the age of 4 children can generally cope with an all-day ski school as their motor skills, are better developed than those of toddlers and at elementary stage of motor skill development. Nevertheless, for a full attention span and more energy levels, the age closer to 5y is usually better and those few months can make a difference.

Until the age of 6 children acquire most skills by copying the teacher and following simple child-centered instructions. After that age, they can focus more on outcomes and it is worthy to spend time on more complex explanations of the tasks.

Children of the age of 10 and over respond well if the reasoning of a certain exercise is provided.

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20. A child with asthma should not be exposed to activities in cold air and higher altitude

THERE IS SOME TRUTH TO IT!

Asthma can be triggered by many things depending on the type of asthma - and cold air and higher altitude are also among those reasons. The first exposure should be closely monitored as cold air and skiing might trigger exercise induced bronchospasm. If asthma is well managed (using long term therapy) still pay attention to slower execution of warm up/cool down exercises.

Do ensure the child (and you) have a bronchodilator on the slope but use it only as advised by the parents or an MD. Peek flowmeter device may be useful but not obligatory.

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We thank Elan, and our great ski model Neva Cigrovski photographed by Igor Božić

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