Injury Prevention

Why do injuries happen?

Injuries can happen for a number of reasons, these include:

- Lapse of concentration
- Incorrect or poor technique
- Equipment malfunction
- Failure to address environmental hazard
- Recklessness
- Overuse or fatigue
- Medical pre-disposition

What is Injury Prevention?

What is Injury Prevention?

Injury Prevention refers to any number of steps taken to reduce the incidence of injury. This includes:

- Identifying, assessing and minimizing inherent risk
- Monitoring the athletes general health and wellbeing
- Regular maintenance of equipment and facilities
- The use of developmental and supportive training aids
- The use of progressions to build mental and physical ability
- Targeted ‘pre-hab’ to strengthen at risk areas (i.e. knees)
- Teaching the athlete what to do if things go wrong

Presentation Topics

- Types of Injuries
- Coaches role in preventing injuries
  - Effective Lesson Design
  - Pre-Hab
  - Falling Safely
  - Evaluation and Assessment
- Conclusion

Types of Injuries

Acute Injury
An acute injury is something that happens immediately such as a break or a sprain.

Chronic Injury
A chronic injury is something that happens overtime such as shin splints, stress fractures and tendonitis.

Types of Injuries

Acute Injuries can be caused by general recklessness, poor technique, equipment failure and a number of other causes including simple falls and slips.

These type of injuries can be reduced through the proper conditioning, equipment maintenance and hazard reduction as well as the use of spotting and developmental aids such as overhead rigging and soft landing surfaces.

Types of Injuries

Chronic Injuries can be caused by over training, incomplete or inattentive rehabilitation following an acute injury and a number of other causes including poor recovery practices.

These type of injuries can be reduced through diverse training regimes, planned recovery time and early intervention.

Common Trampoline Sports Injuries

- **Foot Injury** – *i.e. Rolled Ankle*
  Type: Acute
  Common Cause: Awkward landing, trip on matting

- **Lower Leg Injury** – *i.e. Knee Sprain*
  Type: Acute/Chronic
  Common Cause: Awkward landing, poor technique

Common Trampoline Sports Injuries

- **Arm and Wrist Injury** – *i.e. Broken Arm*
  Type: Acute
  Common Cause: Using arm to break fall

- **Back or Hip Injury** – *i.e. Lower Back Strain*
  Type: Chronic
  Common Cause: Overuse, poor technique

Common Trampoline Sports Injuries

- **Neck Injury** – *i.e. Neck Strain*
  Type: Chronic
  Common Cause: Awkward landing, over training

- **Head Trauma** – *i.e. Concussion*
  Type: Acute
  Common Cause: Fall, collision with object

Sprains vs. Strains

A **Sprain** refers to the overstretching of ligaments, ligaments are bundles of connective tissue that connects bone to bone.

A **Strain** refers to the overstretching or tearing of muscles or tendons, tendons are bands of connective tissue between muscle and bone.

These injuries can vary significantly in severity from minor injuries that need rest to major injuries requiring surgery.

Coach Responsibility

We will never be able to prevent every injury. Nevertheless, it is our responsibility as coaches to remain vigilant and actively work towards reducing their frequency and severity.

Your responsibilities as a coach also include:

- Using safe coaching practices such as the use of progressions, spotting and conditioning.
- Possessing an up to date First Aid Accreditation
- Learning from previous incidents.

Steps Toward Preventing Injuries

To prevent unnecessary injuries, particularly when performing new skills, we must make sure that our athletes are well prepared. Ask yourself the following questions:

Is the athlete physically able ?

- Does the athlete have the strength and flexibility needed to perform the skill?
- Is the athlete carrying any injures that may impede their ability to perform the skill?

Steps Toward Preventing Injuries

Is the athlete mentally able?

- Does the athlete know how to perform the skill?
- Is the athlete confident in their ability to perform the skill? Are they likely to pull out half way through?
- Is the athlete distracted or fatigued?

Does the athlete know what to do when things go wrong?

- Does the athlete know how to land or fall safely?
- Has the athlete mastered the relevant pre-requisites?

Coaches Role in Injury Prevention

Physical Ability

- Designing and implementing a comprehensive skill development plan featuring logical progressions.
- Integrating physical preparation into training.
- Identifying high risk activities and implementing targeted pre-hab activities.
- Balancing training load to prevent overuse injuries.
- Monitoring wellbeing and intervening where appropriate.
- Prioritising athlete safety over scheduled learning goals.

Effective Lesson Design

Comprehensive Warm Up (20-25 minutes)

Aerobic Activity (10 Minutes) - These activities can include running, jumping and skipping and should increase the athletes heartbeat and raise their core body temperature.

Mobilisation (5 Minutes) - Gently rotate all joints starting with the fingers, down to the toes.

Active Stretching (10 Minutes) - A mixture of dynamic and static stretching carried out WITHOUT manual assistance.

Effective Lesson Design

Time Management

Ideally, athletes are kept busy at all times. This can be achieved by using circuits and skill stations to turn time that would otherwise be spent waiting for a turn into productive learning time.

Managing Training Load

Training loads have the potential to protect from or increase risk of injury in athletes. High impact activities should be undertaken during the initial productive periods of the lesson and followed by lower impact activities as the athlete fatigues.

Effective Lesson Design

Integration of Conditioning Exercises
Conditioning should be integrated into the lesson body and complement the athletes current learning outcomes. You can integrate conditioning at the start of different sections or throughout a lesson section through the use of circuits.

Effective use of Prevailing Body Actions (PBAs)
PBAs are key body positions and muscle actions that are used in large numbers of skills. Building lesson plans around PBAs reduces the number of different progressions needed.

Effective Lesson Design

Thorough Cool Down (15-20 minutes)

Gentle Exercise (10 Minutes) - This can include low intensity games or aerobic activities such as jogging or walking

Static Stretching (10 Minutes) – Unassisted stretching with special attention paid to overworked muscle groups.

Cooling down is just as important as warming up as it reduces lactic acid build up and kick starts the recovery process.

Basic Principles of Recovery

Recovery is another vital factor in injury prevention. Proper recovery minimizes the risk of overuse injury and keeps athletes alert and focused. The basic principles of recovery are summarised by the abbreviation R.E.S.T.

R – Get plenty of physical and metal **rest** between training
E – **Eat** plenty of healthy food and maintain a balanced diet.
S – Get plenty of good **sleep** every night.
T – Engage in preventative **treatment** such as gentle stretching, ice/heat therapy, physio, massage and acupuncture.

Pre-Hab

Pre-Hab uses exercises that are prescribed for the rehabilitation of injury in order to build the athletes tolerance and resilience to common mechanisms of injury.

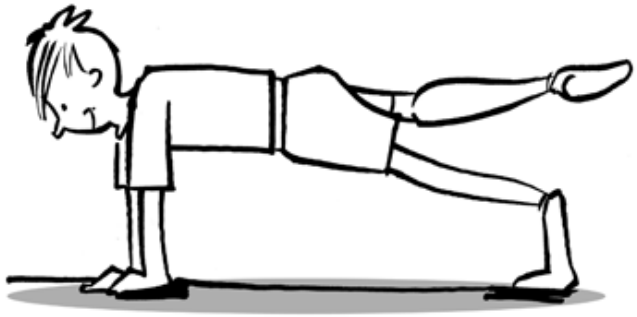
Pre-Hab vs Conditioning

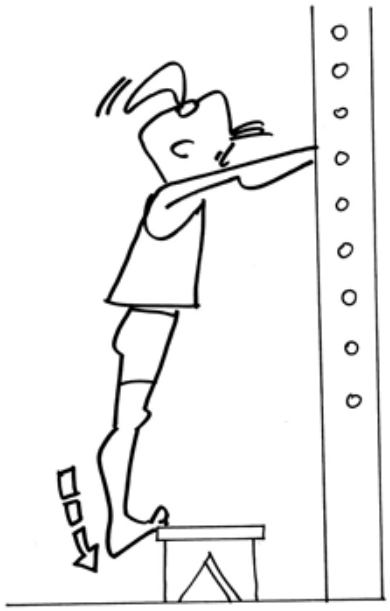
Conditioning generally targets the large muscle groups that are involved in executing gymnastic skills. Pre-Hab exercises target smaller groups of muscles which act to stabilise the body and absorb forces.

Targeting Common Injuries

Ankle Injuries

- Ankle mobilisation using theraband
- Single leg calf raises
- Single leg half squats
- Single leg hops
- Single leg balance
- Bosu Ball balance
- Calf stretch
- Heel stretch

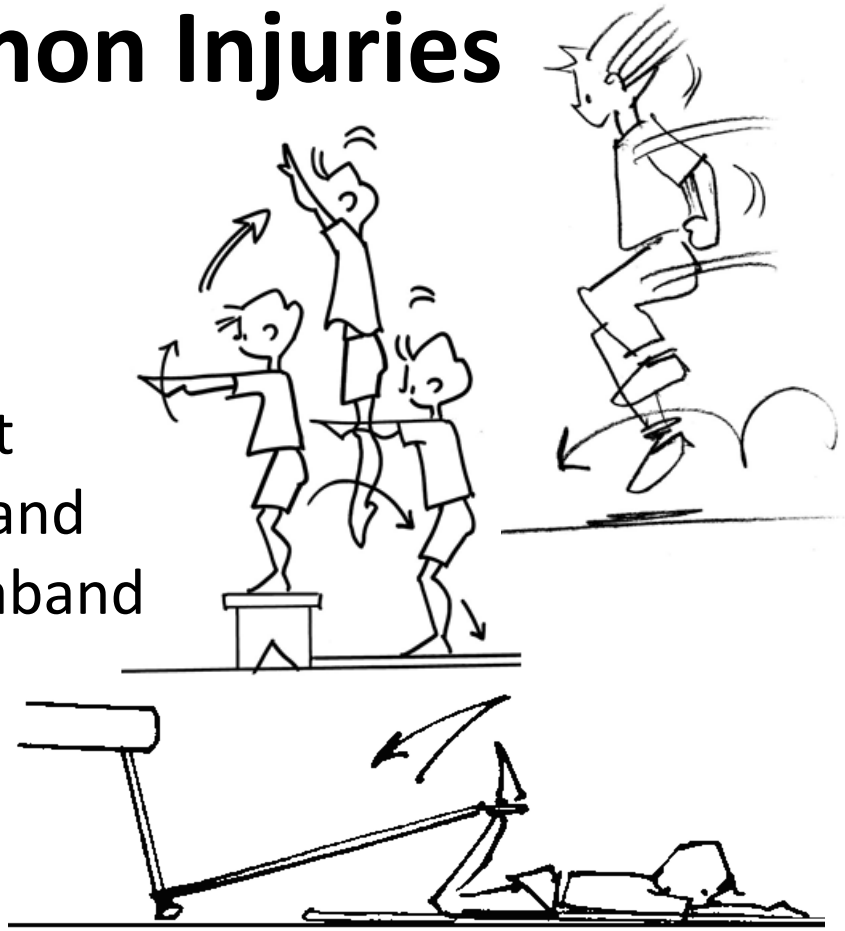




Targeting Common Injuries

Knee Injuries

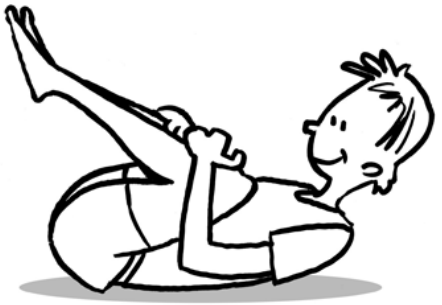
- Bosu Ball balance
- Controlled hops
- Controlled landings from height
- Single leg flextion using theraband
- Single leg extension using theraband
- Squats using theraband

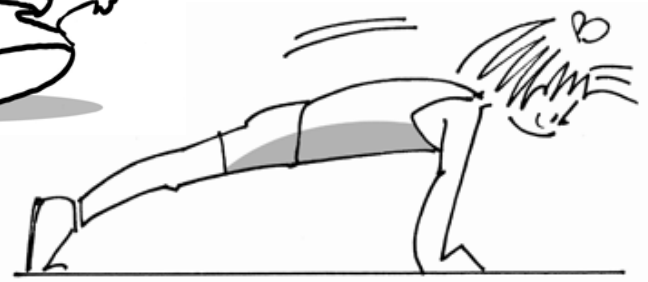


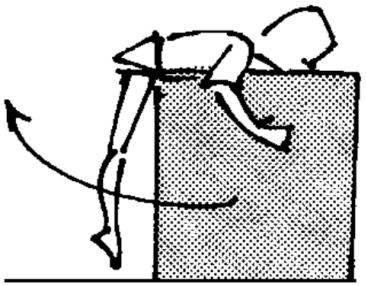
Targeting Common Injuries

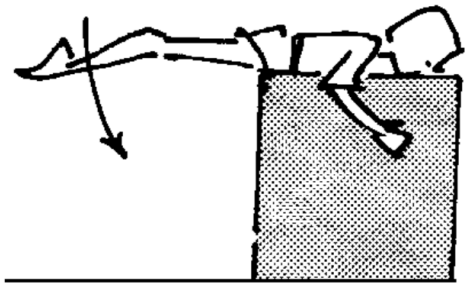
Lower Back Injuries

- Tuck hold
- Front support
- Bent knee sit ups
- Hip extension (to horizontal)
- Pelvic bridge
- Vertical squat jumps









Integrating Injury Prevention into Skills

Seat Drop – Hands face forward, elbows slightly bent.

Cartwheel – 'T-Shape' hand placement, second hand turned in

Back Handspring – Hands should face slightly inwards.

Can you think of any other examples?

Coaches Role in Injury Prevention

Mental ability

- Designing and implementing a comprehensive skill development plan featuring logical progressions.
- Using training aids where appropriate
- Assessing athletes mental readiness before attempting a new skill.
- Developing a trusting relationship with the athlete
- Monitoring wellbeing and intervening where appropriate.
- Prioritising athlete safety over scheduled learning goals.

Ensuring Mental Readiness

Many physical considerations will also benefit the athlete mental ability to perform a skill.

Break the skill down

Use pre-requisites, progressions and drills to allow the athlete to become familiar with different phases of the new skill.

Use training aids

This includes overhead rigging (the harness), soft play equipment, soft landing mats to teach the skill ‘uphill’ and hand spotting.

Ensuring Mental Readiness

Stay alert and engaged

Athletes should of course be supervised at all times however it is important to stay alert when coaching new skills in case something does goes wrong. This may involve standing with the athlete without spotting or the use of soft spotting mats.

Be patient

Sometimes, athletes will have off days where they are low in confidence and more likely to make mistakes. On these days, it's a good idea to go to basics and focus on their fundamental skills.

Coaches Role in Injury Prevention

Knowing what to do when things go wrong

Sometimes things just go wrong. As coaches, it is our responsibility to prepare our athletes for this possibility.

If something does go wrong or simply feels off (e.g. foot or hand slips, lands on edge), we don't want our athletes to panic or bail on their skill as this is likely to result in injury. This is when knowledge of crash positions and mastery of pre-requisites is crucial.

Landing Safely

The easiest type of injury to prevent are acute injuries caused by bad landings.

Athletes should be encouraged to use the proper landing positions at all times, even when performing basic skills to re-enforce good technique and prevent chronic back, knee and ankle issues.

The ‘Check’ Landing Position

*This is the most technically **correct** landing shape according to the Trampoline Gymnastics Code of Points.*

- Knees slightly bent to absorb impact
- Back straight with chest open
- Head in neutral
- Arms extended to the front, raised at a 45^{o} Angle

The ‘Motorbike’ Landing Position

*This is a technically **incorrect** landing shape according to the Trampoline Gymnastics Code of Points however we encourage younger athletes to use this position to prevent back strain.*

- Knees slightly bent to absorb impact
- Back straight with chest slightly closed
- Head in neutral
- Arms extended to the front, raised at a 90^{o} Angle

Falling Safely

While athlete's should aim to land properly at all times, sometimes this isn't possible. By teaching our athletes how to fall safely we are preparing them for if and when things go wrong and minimizing the risk of injury.

General Principles of a Safe Fall

When you're about to stack, put it on your back!

When falling, the safest way to land is on your back in a 'Safety Roll' position. Even when initially falling forward, this safety position can be achieved by the athlete pulling their arms in and performing a half turn onto their back.

Don't end up dead, protect your head!

The most important part of your body to protect is your head and neck. Where possible, avoid letting your head touch the equipment around you, including landing mats.

General Principles of a Safe Fall

Don't be a goose, stay loose!

When panicking, your instinct will be to tense up and stop your body as quick as you can however the safest strategy is to go with the momentum of the fall. After all, it's not the fall that hurts you; it's the sudden stop at the end.

Oh %#@, time to tuck!

When in doubt, it is safest to get into a tuck position. Tucking spreads the weight of a fall and reduces the chance of acute injury.

Safety Positions

Safety positions are the way athletes should fall to help protect them.

Most gymnasts will already know how to fall safely due to their progressions and will perform them instinctually when something goes wrong. However, it is important that we continue to remind and reinforce these positions no matter the age or experience of the participant in order to prevent injuries from occurring.

Safety Position: Back Drop (Safety Roll)

Position – Arms held in to chest, back curved, knees slightly tucked, head in neutral.

Used For - Backward instability, over rotation or travel as well as forward under rotation or travel.

e.g. Half twist travel, Barani over rotation.

Safety Position: Back Drop (Safety Roll)

Additionally, the back drop position can also be used for a forward instability, over rotation or travel when proceeded by a half twist.

e.g. ¾ front, to feet over rotation.

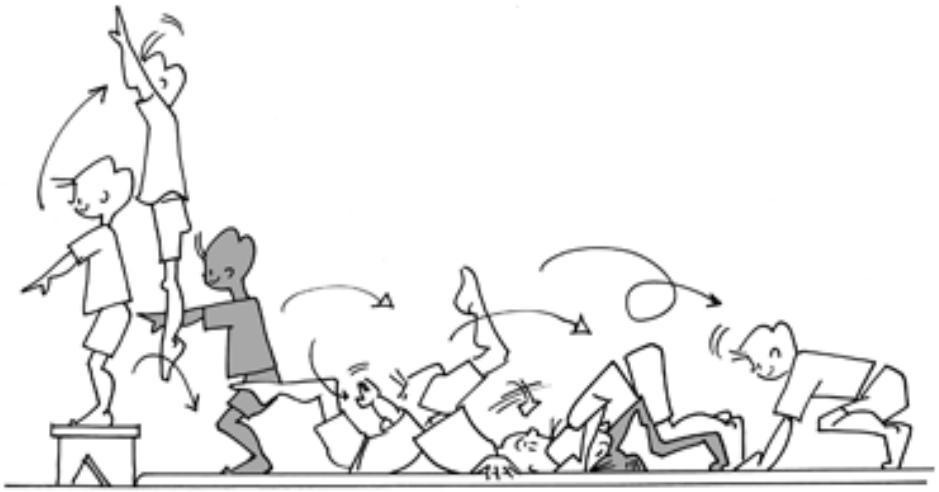
Safety Position: Front Drop

Position - Flat on stomach, arms and legs held straight and outstretched, head in neutral.

Used For - Forward instability, over rotation or travel as well as backward under rotation.

e.g. Full twist travel, Ballout over rotation.

Safety Position: Backward Roll



Position - Back rounded, legs tucked, head in neutral, elbows bent, hands face inwards.

Used For – Backward over rotation.

e.g. Half twist over rotation, Back handspring over rotation.

Safety Position: Forward Roll

Position - Hands face inwards, elbows bent, back rounded, knees tucked in, head in neutral.

Used For – Forward over rotation or travel.

e.g. Straddle jump instability, Front Sault over rotation.

Safety Position: Shoulder Roll

Position - Back rounded, legs tucked, head in neutral, elbows bent.

Used For – Twisting instability, over rotation or under rotation.

e.g. Half twist instability, Barani under rotation.

Safety Position: Seat Drop

Position – Legs extended with soft knees, arms held by side, elbows bent slightly, hands facing forward, back straight, head in neutral.

Used For – Forward instability or under rotation.

e.g. Pike jump instability, Front Sault under rotation.

Safety Position: Hands and Knees

Position – Hands and shins flat on the ground, knees and hips bent at 90 degrees, hands facing forward, elbows soft, head in neutral, back straight.

Used For – Backward under rotation.

e.g. Back over under rotation, Back Sault under rotation.

Example Scenario #1

An athlete on Tumbling is competing a pass that finishes with a **Rebound Front Sault (T)**. On their first warm up, the athlete underestimates the power needed on the competition floor and under rotates their front sault.

The athlete is tucked and falling backward, what safety position should they assume?

Example Scenario #1

Did the athlete respond correctly to the scenario?

What measures, if any, could have been taken to help avoid this scenario?

Example Scenario #2

An athlete is competing a **Back Sault (T)** Spotter on Double Mini. Not being familiar with the different trampoline, they throw their hips forward, landing on the Landing Mat after clipping the trampoline with their heels.

The athlete is falling forward with their chest down, what safety position should they assume?

Example Scenario #2

Did the athlete respond correctly to the scenario?

What measures, if any, could have been taken to help avoid this scenario?

Example Scenario #3

An athlete on Tumbling has just learnt **Round Off, Back Handspring, Back Handspring** and no longer needs spotting. On their next turn, the athlete finishes their handspring with their shoulders too high and pulls out of their second handspring at the last minute.

The athlete is travelling backward, what safety position should they assume?

Example Scenario #3

Did the athlete respond correctly to the scenario?

What measures, if any, could have been taken to help avoid this scenario?

Example Scenario #4

An athlete is working on a new pass on Double Mini involving a **Back Sault (T)** spotter and **Rudi (S)** dismount. The athlete over-rotates their dismount and lands on their heels on the landing mat.

The athlete is in a straight body position and falling backward, what safety position should they assume?

Example Scenario #4

Did the athlete respond correctly to the scenario?

What measures, if any, could have been taken to help avoid this scenario?

Example Scenario #5

An athlete on Tumbling is competing a pass that finishes with a **Back Sault (T)**. During their competition pass, they travel further than anticipated and land their penultimate skill on the crash mat. They have already set for their dismount somersault.

The athlete is rotating backward, what safety position should they assume?

Example Scenario #5

Did the athlete respond correctly to the scenario?

What measures, if any, could have been taken to help avoid this scenario?

Injury Response

Injury Prevention is especially important following an injury as it helps reduce the likelihood that the injury will happen again.

When an injury occurs, you should:

- Follow **DRSABCD**
- Apply **First Aid** as appropriate
- Complete an **Incident Report**
- Take part in a **Post Incident Debrief**

Injury Response

During the Post Incident Debrief, you should reflect on your response and answer the following questions:

- What was done well?
- What was done poorly?
- What could be done to prevent this from happening again?

It is your responsibility to suggest, and assist in the implementation of, preventative changes and help communicate any changes with the rest of the coaching staff.

Reflection on Practice

- How many injury prevention strategies do you currently employ?
- Could you improve your lesson design to get better results from you athletes?
- Are you accurately assessing an athletes physical and mental ability to perform new skills?
- Are you confident in your ability to respond to common injuries?

How Do We Prevent Injuries?

Let's return to a previous slide and discuss how we can minimize the main causes injury.

- Lapse of concentration – *Monitoring athletes mental state and general wellbeing.*
- Incorrect or poor technique – *Using progressions and conditioning to re-enforce correct technique.*
- Equipment malfunction – *Regular maintenance and proper use of equipment.*

How Do We Prevent Injuries?

- Failure to address environmental hazard – *Constant risk assessment and hazard reduction throughout the general facility.*
- Recklessness – *Behavioral management and safe training practices.*
- Overuse or fatigue – *Diverse training regimes and good recovery practices.*
- Medical pre-disposition – *Pre-hab and general conditioning to build strength and resilience.*

What are the rules of Injury Prevention?