

## Pentathlon Return-to-Sport Strategy

### How to move through the steps

The athlete should spend a minimum of 24 hours at each step before progressing on to the next.

It is common for a participant’s symptoms to worsen slightly with activity. This is acceptable as they progress through steps 1 to 3 of return to sport, so long as their symptom worsening is:

- **mild:** symptoms worsen by only one to two points on zero-to-10 scale, and
- **brief:** symptoms settle back down to pre-activity levels within an hour.

If the participant’s symptoms worsen more than this, they should stop the activity and try resuming the next day at the same step.

If the participant experiences concussion symptoms after medical clearance (i.e., during steps 4 to 6), they should return to step 3 to establish full resolution of symptoms. Medical clearance will be required again before progressing to step 4.

Step	Activity	Activity details	Goal of each step
<b>1</b>	Activities of daily living and relative rest (first 24 to 48 hours)	<ul style="list-style-type: none"> <li>○ Typical activities at home (e.g. preparing meals, social interactions, light walking) that do not result in more than mild and brief worsening of symptoms</li> <li>○ Minimize screen time</li> </ul>	Gradual reintroduction of typical activities.
After a maximum of 24 to 48 hours after injury, progress to step 2.			
<b>2</b>	2A: Light effort aerobic exercise	<ul style="list-style-type: none"> <li>○ Start with light aerobic exercise, that results in only mild and brief worsening of symptoms.</li> <li>○ Light aerobic exercise means:                             <ul style="list-style-type: none"> <li>▸ Exercise that might increase heart rate slightly, but won’t cause you to breathe harder or sweat (up to about 55% of maximum heart rate)</li> </ul> </li> <li>○ Take breaks and modify activities as needed</li> </ul> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>▸ stationary cycling</li> <li>▸ walking at a slow to medium pace</li> </ul>	Increase heart rate.
After at least 24 hours, if the athlete can tolerate light aerobic exercise, progress to step 2B.			
	2B: Moderate effort aerobic exercise	<ul style="list-style-type: none"> <li>○ Gradually increase tolerance and intensity of aerobic activities, that do not result in more than mild and brief worsening of symptoms</li> <li>○ Moderate exercise means:                             <ul style="list-style-type: none"> <li>▸ Exercise that increases heart rate and breathing slightly, but you could still hold a conversation</li> </ul> </li> </ul>	

		<p>while doing it (up to about 70% of maximum heart rate)</p> <ul style="list-style-type: none"> <li>○ May begin light resistance training that results in only mild and brief worsening of symptoms</li> <li>○ Take breaks and modify activities as needed</li> </ul> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>▸ stationary cycling</li> <li>▸ walking at a brisk pace or light jogging</li> </ul>	
After at least 24 hours, if the athlete can tolerate moderate aerobic exercise, progress to step 3.			
<b>3</b>	Individual sport-specific activities, without risk of inadvertent head impact	<ul style="list-style-type: none"> <li>○ Add sport-specific activities that result in only mild and brief worsening of symptoms.</li> <li>○ Perform activities individually and under supervision from a coach or parent/caregiver</li> </ul> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>▸ <b>Fencing:</b> Footwork and individual drills (no partnering); No head contact</li> <li>▸ <b>Laser run*:</b> Running, changing direction; Standing target laser shooting</li> <li>▸ <b>Swimming**:</b> With sufficient space to prevent inadvertent contact with others; no flip turns; no diving into the pool</li> <li>▸ <b>Obstacle:</b> Running, changing direction; No climbing or activities at heights yet</li> </ul> <p><i>Notes:</i></p> <p>*Focus and concentration involved in target shooting can worsen symptoms for some individuals. An athlete’s tolerance of target shooting should be considered.</p> <p>**Swimming can worsen symptoms, such as dizziness and nausea, for some individuals. An athlete’s tolerance of swimming should be carefully considered, and this activity may have to wait until after affected symptoms are gone.</p>	Increase the intensity of aerobic activities and introduce low-risk sport-specific movements
<p><b>Medical clearance</b></p> <p>If the athlete is free of all concussion-related symptoms at rest and with physical exertion, and has been medically cleared, progress to step 4.</p>			
<b>4</b>	Non-contact training drills and activities	<ul style="list-style-type: none"> <li>○ Progress to exercises with no body contact at high intensity, including more challenging drills and activities</li> <li>○ Athletes can be integrated into a multi-participant environment without contact</li> </ul> <p><b>Examples:</b></p>	Resume usual intensity of exercise, coordination and activity-related cognitive skills.

		<ul style="list-style-type: none"> <li>▸ <b>Fencing:</b> Controlled drills with a trusted partner; no head touches or other head contact</li> <li>▸ <b>Laser Run:</b> Full training, including running and target shooting at full exertion</li> <li>▸ <b>Swimming:</b> Including flip turns; no diving into the pool</li> <li>▸ <b>Obstacle:</b> Begin and progress training that includes climbing, heights and passing under obstacles</li> </ul>	
If the athlete can tolerate usual practice with no return of symptoms, progress to step 5.			
<b>5</b>	Return to all non-competitive activities, full training and practice	<ul style="list-style-type: none"> <li>○ Progress to higher-risk activities including typical training activities, full-contact sport practices and physical education class activities</li> <li>○ Do not participate in competitive gameplay</li> </ul> <p><b>Examples:</b></p> <ul style="list-style-type: none"> <li>▸ <b>Fencing:</b> Full training, including all target areas</li> <li>▸ <b>Laser Run:</b> Full training</li> <li>▸ <b>Swimming:</b> Full training, including diving into the pool</li> <li>▸ <b>Obstacle:</b> Progress to full training</li> </ul>	Return to activities that have a risk of falling or body contact. Restore confidence and assess functional skills by coaching staff
If the athlete can tolerate non-competitive, high-risk activities with no return of symptoms, progress to step 6.			
<b>6</b>	Return to sport	Full training, practice and competition	
<b>Return to sport is complete.</b>			

Table adapted from: Patricios, Schneider et al., 2023; Reed, Zemek et al., 2023