WHPSC 2025 Technical Rules

1 Interpretation

1.1 Complementary to IHPVA Rules: Entrants at the WHPSC shall comply with all IHPVA rules applicable to the event. Any rules imposed for the WHPSC shall be treated as complementary to the IHPVA rules, and shall not obviate or replace any of said rules. If a conflict is found to exist between the IHPVA rules and the WHPSC rules, the IHPVA rules shall take precedence.

1.2 Mandatory and Optional Provisions: Within these rules, certain optional or recommended measures are described in order to document and communicate best practices within the sport without specifically imposing a corresponding requirement. Provisions that are mandatory are described with definitive terms such as “must” and “shall”. Provisions that are optional are described with terms such as “advised” and “optionally”.

1.3 Discretion of Event Organizers: To the extent that vehicle design and operation impacts or is likely to impact safety, the WHPSC event organizers shall have discretion to impose additional design or operational requirements for topics not specifically addressed in these rules or the IHPVA rules.

2 Vehicle Design

2.1 Human Power: As per IHPVA rule 3.1.1, vehicles must be driven solely by human power. Non-human power sources (batteries, solar cells, etc.) are permitted only for powering sensors, displays, communication equipment, and lights. Control devices, cooling fans, powered aerodynamic devices, etc., may not be powered from non-human sources. Cooling fans used for electronics cooling are included in the above restriction, regardless of whether such fans have a cooling effect on the rider.

Non-human power sources are specifically permitted for the operation of electrically-actuated gear shifting, provided it can be shown by the entrant that such devices cannot impart any forward momentum to the vehicle.

2.2 Redundant Braking: Any vehicle participating at WHPSC must have at least two functioning braking systems capable of slowing the vehicle from full speed to a stop. The braking systems shall be substantially independent such that a failure in one system is unlikely to impact the operability of the other system. Multiple braking systems may act on the same wheel(s) of a vehicle, however, the permissibility of any other shared components or features between the two systems (e.g. a common lever or a common rotor) shall be left to the discretion of the Technical Inspector.

Entrants may contact the WHPSC organizers in advance of the competition to determine if a particular braking arrangement will be acceptable with respect to this rule.

Commercially-produced velomobiles shall be considered acceptable in their as-built condition with respect to braking features, but entrants using such vehicles are recommended to consider the addition of redundant braking in vehicles that do not already include multiple braking systems.

2.3 Redundancy for Camera Vision: Any vehicle that is designed to be navigated by other than a canopy, window, periscope or analogous line-of-sight method from the rider to the exterior (e.g. by an electronic camera vision system) shall have a redundant means for the rider to view the road ahead of the vehicle. This redundant means of vision may be of any form, including but not limited to a (second) camera vision system, a window, or a periscope. The redundant means of vision must be fully independent of the primary means (i.e. no shared functional components). Both systems must be operable and usable by the rider at all times without any action on their part (e.g. no need to activate or enable the alternate system to initiate function).

In the common case that both the primary and redundant means of vision are camera vision systems, it is recommended that the systems not use identical hardware or software in order to avoid identical modes of failure in both systems simultaneously. Entrants using dual camera vision systems are strongly advised to test and practice the transition from using the primary system to using the secondary system under realistic riding conditions.

2.4 Protection of Occupants: Each vehicle must be designed to reasonably contain and protect its occupant(s) in the event of an accident. Protection measures should address both the heat generated when sliding on asphalt as well as the potential for damage from foreign objects.

Each entrant must reasonably show that no occupant can be ejected from the vehicle. In addition to any outer fairing, the design must incorporate other means to prevent the rider(s) from being separated from the vehicle (e.g. a safety harness), as well as a protective structure to keep the rider(s) safe. Panels that cover a rider's head or torso must be fastened to the main structure with mechanical fasteners other than tape.

At the discretion of the Technical Inspector, exceptions can be made for slower vehicles achieving speeds more typical of a regular production bicycle (i.e. less than 40 MPH).

Commercially-produced velomobiles shall be considered acceptable in their as-built condition with respect to the protection of occupants, but entrants using such vehicles are recommended to consider the addition of latches, safety harnesses (e.g. four-point harnesses), and other potential rider protection features that their velomobile might not already include.

2.5 Emergency Access to Rider: During the Technical Inspection, each team must demonstrate that they can safely extract their rider(s) from their vehicle within 180 seconds. The vehicle with rider inside shall initially be placed on its side, and a soft mat will be provided by the Technical Inspector for use during this demonstration to avoid damage to the vehicle. The rider(s) may not assist during this demonstration (e.g. no unlatching of hatches or fairings, no unclipping from clipless pedals). The number of external people required to execute the demonstration shall then become the minimum number of support crew required to be present in the team’s Chase Vehicle during the competition, unless a greater number of support crew is stipulated by another rule or policy at the WHPSC.

For additional clarity, if latches or other mechanical devices (e.g. hook and loop straps) are used to secure fairing pieces together that require removal in order to gain access to a rider, they must be able to be opened from the outside by the team's crew. The location of any access holes or reference points must be clearly obvious to the crew. Chase officials must be briefed on emergency procedures. If special tools are required, such tools must be present in the chase vehicle before any speed attempt can commence. Officials at the catch area must be made aware of any special procedures to be followed in the absence of team members at catch.

Rider access strategies that require damage to the vehicle are permissible, and such steps in the process shall not be required to be demonstrated. However, the overall process and timing must nevertheless be demonstrated to satisfy the WHPSC technical inspection. For any destructive steps not explicitly demonstrated, the Technical Inspector shall require that a detailed written explanation be provided for the actions to be taken by the support crew, including what tools will be used, where said tools will be stored, and markings on the actual vehicle to indicate where those tools should be applied.

2.6 Risks from Batteries: Vehicles shall be designed and operated to mitigate any risk from damaged or defective batteries. Relevant design features shall be described to the Technical Inspector during the inspection of the vehicle.

Entrants are strongly advised against using lithium-polymer batteries in their vehicles due to the well-documented sensitivity of such batteries to mechanical damage. Alternative battery chemistries (e.g. LiFePO4) should be considered instead.

3 Vehicle Operation

3.1 Helmets: Any occupant in a vehicle competing at the WHPSC shall wear a cycling or motorsport helmet that meets the standards of a nationally accredited testing facility. Said helmet shall be worn and secured as per the manufacturer's guidelines at all times while the vehicle is in motion.

No helmet shall be acceptable for use at the WHPSC unless it includes a manufacturer-affixed label indicating the safety standard(s) met and the date of manufacture. Unless specifically warranted by the manufacturer for proper performance beyond 60 months, any helmet used at the WHPSC must be less than 60 months old at the start of the event. Illegible, modified, or non-original safety stickers shall not be accepted.

All helmets to be used shall be inspected by WHPSC personnel prior to the event, and may be rejected if there is any evidence of non-cosmetic damage or if they do not comply with the above requirements.

3.2 Launch Assistant: Vehicles at WHPSC are restricted to have at most three (3) launch assistants plus one additional assistant per additional rider in multirider vehicles. The launch assistants may push the vehicle, but any contact with the vehicle after the first 15 meters of motion shall invalidate that speed attempt for record-setting purposes. The launch assistants may not use any powered or wheeled device (e.g. roller skates) to assist the vehicle, but shoes and gloves are permitted.

3.3 Launch Carts: No vehicle at WHPSC shall use any discarding launch device (i.e. a "launch cart"). Fixed or retractable wheels or other mechanisms (i.e. "landing gear") may be used, but must remain attached to the vehicle for the duration of any speed attempt. Accidental detachment of such devices shall invalidate any speed attempt.

3.4 Demonstration of Launch: Each entrant must demonstrate the setup and launch of their vehicle during the technical inspection. This must be completed within 240 seconds from the time the vehicle is placed on the ground at a designated location. Prior to the timed portion of the test, the vehicle must be in a typical pre-staged condition as would be the case prior to a competition run (e.g. no pre-loading of rider(s) unless that is the standard means of staging that vehicle). The Technical Inspector may waive this requirement or accept evidence of a previous launch demonstration (e.g. a video or independent witness) at their sole discretion.