

Supplementary Material 1.

Below we have estimated population statistics to support the Participant Classification Framework. Data captures major sporting leagues/events both globally, and specific to Australia, to encompass as many individuals as possible. We acknowledge this does not include every sporting code; however, we have tried to capture those that will have the biggest impact on population statistics. Furthermore, the addition of region-specific statistics (Australia), is an attempt to capture more specific data around the Tier 3: Highly Trained/ National level, where global statistics are sparse. These estimates are based on continually fluctuating data and are not designed to serve as fixed parameters. Rather, these estimates support our rationale and criteria differentiating each athletic tier and ground the concept of the Participant Classification Framework in population statistics. We encourage the reader to appreciate this is not an all-encompassing, perfect resource, rather an attempt to contextualise the Participant Classification Framework to aid greater interpretation.

Tier	Global population statistics (7.9 billion ¹)	Australian population statistics (25.7 million ¹)
Tier 5 World Class	<p><u>Olympic Sports</u> – medallists</p> <p>Olympic and Paralympic Games medallists = 3,244 athletes</p> <ul style="list-style-type: none"> • 2020 Olympics – 1,315 athletes² (1,080 medals)³ • 2016 Paralympics – 1,584 athletes (1,597 medals)³ • 2018 Winter Olympics – 345 athletes⁴ (306 medals)³ <p>Basketball = additional 167 athletes (non-Olympic) Starters from the National Basketball Association (NBA) (n = 30 teams) and Women’s National Basketball Association (WNBA) (n = 12 teams)⁵. Totalling 210 athletes. <i>Minus n = 43 NBA and WBNA Olympic medallists^{3,6}</i></p> <p>Football = additional 110 (non-Olympic) Starters from the teams that made the quarter finals in the men’s and women’s FIFA World Cup⁷. Totalling 176 athletes. <i>Men’s Olympic medallists are not subtracted as this is an U23 competition for men</i> <i>Minus n = 66 women’s Olympic medallists</i></p> <p><u>Non-Olympic Sports</u> – top players in international teams</p>	<p><u>Olympic Sports</u> – medallists</p> <p>Olympic and Paralympic Games medallists = 164 athletes</p> <ul style="list-style-type: none"> • 2020 Olympics – 99 athletes (46 medals)³ • 2020 Paralympics – 62 athletes (80 medals)¹¹ • 2018 Winter Olympics – 3 athletes (3 medals)³ <p>An additional 37 athletes placed between 4-10th in their event¹² (must have been in the final, excludes teams, boat crews and relays).</p> <p><u>Non-Olympic Sports</u> – top players in international teams</p> <p>AFL and AFL W = 43 athletes All Australian teams from 2020 (men, n = 22) and women (n = 21)^{13,14}</p> <p>Cricket n = 22 athletes Top 11 players from the Australian men’s and women’s cricket team, currently ranked 3rd and 1st in the world respectively^{10,15}</p> <p>Netball = 7 athletes 7 starting players in the top ranked team in the world¹⁶</p>

	<p>American Football = 352 athletes Starters from the National Football League (n = 32 teams)⁸</p> <p>Rugby Union = 180 athletes Starters from teams that made the quarter finals (men n = 120) and semi-finals (women n = 60) in the Rugby World Cup⁹</p> <p>Rugby League = 156 athletes Starters from teams that made the quarter finals (men n = 104) and semi-finals (women n = 52) in the Rugby League World Cup.</p> <p>Cricket = 264 athletes Starters from teams that made the semi-finals of the ICC Cricket World Cup (men's ODI n = 44, women's ODI n = 44, women's t20 n = 44)¹⁰ and quarter finals of the ICC Men's T20 World Cup (n = 88)¹⁰ Starters from the top 4 national male and female test match teams (n = 44)¹⁰</p>	<p>Rugby Union = 30 athletes 15 starting players both the men's and women's Australian teams currently ranked 6th and 5th in the world, respectively¹⁷</p> <p>Rugby League = 31 athletes 13 starting players in the men's and women's Australian teams currently ranked 2nd and 1st in the world, respectively¹⁸ 5 starting players in the Australian wheelchair team ranked 4th in the world¹⁸</p>
	<p>4,473 athletes globally are considered World Class =0.000057% of the global population</p>	<p>297 athletes in Australia are considered World Class = 0.0012% of the Australian population</p>
<p>Tier 4 Elite / International Level</p>	<p><u>Olympic Sports</u> – participants</p> <p>Olympic and Paralympic Games = 15,772 athletes</p> <ul style="list-style-type: none"> • 2020 Olympic Entries – 11,656³ • 2020 Paralympic Entries – 4,527³ • 2018 Winter Olympic Entries – 2,833³ <p>19,016 athletes (minus n = 3,244 Tier 5 athletes)</p> <p>Football = additional 1,186 athletes (non-Olympic) 32 teams (23 players per squad) each in the men's and women's FIFA World Cup⁷. Totalling 1,472 players. Minus 8 women's Olympic teams, total of n = 176 athletes Minus n = 110 Tier 5 athletes (non-Olympic players)</p> <p>Basketball = additional 2,037 athletes (non-Olympic) All players currently playing within the NBA/WNBA⁵ (n = 630) Players in other professional Leagues for Men (n = 15 Africa, n = 23 Asia, n = 43 Europe, n = 3 Oceania, n = 20 Americas) and women (n = 3 Africa, n = 7 Asia, n = 36 Europe, n = 2 Oceania, n = 3 Americas), ~15 players per squad. Totalling 2,325 athletes.</p>	<p><u>Olympic Sports</u> – participants</p> <p>Olympic and Paralympic Games = 311 athletes</p> <ul style="list-style-type: none"> • 2020 Olympic Team – 486 athletes²² • 2020 Paralympic Team – 192 athletes²³ • 2018 Winter Olympic Team – 50 athletes²⁴ <p>512 athletes, (minus n = 201 Tier 5 athletes) = 311 athletes</p> <p>Basketball = additional 325 athletes (non-Olympic) Estimates would suggest that ~340 Australian men are currently playing in Professional Basketball Leagues around the world²⁵. A list of women (other than Olympians named previously) was unable to be sourced. Minus n = 15 Olympic athletes</p> <p>Baseball = additional 46 athletes (non-Olympic) Estimates would suggest that ~46 Australians men are currently playing in Professional Baseball Leagues around the world²⁶</p> <p>Tennis = additional 19 athletes (non-Olympic)</p>

	<p><i>Minus n = 121 NBA and WBNA Olympic athletes⁶</i> <i>Minus n = 167 Tier 5 athletes (non-Olympic players)</i></p> <p>Non-Olympic Sports – international teams</p> <p>American Football = 1,344 athletes All 1,696 players in the National Football League¹⁹ <i>Minus n = 352 Tier 5 athletes</i></p> <p>Cricket = 528 athletes 10 teams in the ICC Men's Cricket World Cup¹⁰ 16 teams in the ICC Men's T20 World Cup¹⁰ 8 teams in the ICC Women's Cricket World Cup¹⁰ 10 teams in the ICC Women's T20 World Cup¹⁰ Top 10 ranked national male and female test match teams¹⁰ (18 players per squad for men and women)²⁰ <i>Minus n = 264 Tier 5 athletes</i></p> <p>Rugby Union = 556 athletes 20 and 12 teams (23 players per squad) in the men's and women's Rugby World Cup⁹, totalling 736 athletes <i>Minus n = 180 Tier 5 athletes</i></p> <p>Rugby League = 252 athletes 16 and 8 teams (17 players per squad) in the men's and women's Rugby League World Cup, totalling 408 athletes <i>Minus n = 156 Tier 5 athletes</i></p> <p>NCAA</p> <p>NCAA = 176,000 athletes 176,000 athletes compete at the Division I level²¹</p>	<p>16 males²⁷ and 12 females²⁸ ranked within the top 300 players in the world <i>Minus n = 9 Olympic athletes</i></p> <p>Non-Olympic Sports – international teams</p> <p>AFL & AFL W = 617 athletes 18 teams men (n=396)²⁹ + 12 teams for women (n=264)²⁹. 22 players per team. <i>Minus n = 43 Tier 5 athletes</i></p> <p>Cricket = 31 athletes 53 male and female athletes are currently considered active players on Australian cricket team¹⁵ <i>Minus n = 22 Tier 5 athletes</i></p> <p>Rugby Union = 53 athletes 43 men named on the Australian squad³⁰ 40 women named on the Australian squad³¹ <i>Minus n = 30 Tier 5 players</i></p> <p>Rugby League = 21 athletes 21 players in the men's and women's Australian squads³² 10 athletes on the Australian wheelchair squad¹⁸ <i>Minus n = 31 Tier 5 players</i></p>
	<p align="center">~197,675 of athletes globally are Elite / International Level = 0.0025% of the global population</p>	<p align="center">~1,423 athletes in Australia are Elite / International Level = 0.0055% of Australian population</p>
<p align="center">Tier 3 Highly trained / National level (Provincial /</p>	<p>Our calculations (above) suggest that there are ~20x as many individuals considered to be world class (Tier 5) in Australia, compared to globally, alongside ~twice as many competing at the elite/ international (Tier 4) level. Together, this illustrates that Australia have a greater number of participants competing at the highest-level in sport, compared to global norms, and therefore that they have a greater percentage of</p>	<p><i>National participation rates among the most popular Australian sports.</i></p> <p>Olympic Sports – national participation</p> <p>Athletics = 661 athletes</p>

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the population competing in Tiers 3-5.

It is therefore estimated that the percentage of global athletes participating at the national (Tier 3) level is between 2-20x less than the percentage of Australian individuals at this level (i.e., 5-50% of the total number in Australia). Athletes considered to be at the Tier 3 level globally is likely to be closer to 50% (rather than 5%) of the percentage of individuals in Australia, given the Australian Olympic medal success comparative to population size:

Australia finished 6th out of 206 nations on the Tokyo 2020 medal table³, illustrating their global sporting prowess. Australia achieved one gold medal per 1.5 million people at the Tokyo 2020 Olympic Games, compared to the average of one gold medal per 40.5 million people across all 65 nations that won a gold medal at the games³³.

0.027% of Australians are considered highly trained/national level (Tier 3).
50% of 0.027% = **0.014% (110,600,000 individuals)**

724 entries into the 2021 Australian Track and Field Championships Open events³⁴
Minus n = 63 athletes on Olympic team (Tier 4 + 5).

Basketball = 240 athletes

The national competition has 10 men's teams³⁵ and 8 women's teams³⁶, each with 15 players = 270
Minus n = 30 athletes on the Olympic Team (Tier 5)

Cycling = 452 athletes

63 Athletes (men and women) competed at 2021 Track Nationals Open events³⁷
418 athletes (men and women) completed at the 2021 Road National Championships³⁸
Minus n = 29 on the Olympic Team (Tier 4 + 5)

Hockey = 304 athletes

7 men's teams and 7 women's teams of 24 players compete in the Australian National league (HockeyOne)³⁹ = 336
Minus n = 32 athletes on the Olympic team (Tier 4 + 5).

Soccer = 468 athletes

In the A-League, there are 12 men's teams⁴⁰ and 9 women's teams⁴¹, each with 24 athletes = 504
Minus n = 36 athletes on the Olympic Team (Tier 4 + 5)

Swimming: 903 athletes

938 entries into the 2021 Australian Swimming Championships Open events⁴²
Minus n = 35 athletes on the Olympic team (Tier 4 + 5)

Tennis = 84 athletes

53 males⁴³ and 31 females²⁸ are currently ranked outside the top 300 by the ATP/WTP system

Water polo = 274 athletes

Australia water polo league has 10 teams in both the men's and women's competitions⁴⁴, each with 15 athletes = 300 athletes.
Minus n = 26 athletes on the Olympic Team (Tier 4 + 5)

Wheelchair basketball = 144 athletes

The National Wheelchair Basketball League has 7 and 6 teams

		<p>of for the men's and women's leagues⁴⁵, each with 12 athletes = 156 athletes <i>Minus n = 12 athletes on the Olympic Team (Tier 4 + 5)</i></p> <p><u>Non-Olympic Sports – national participation</u></p> <p>AFL = 2,420 athletes Men's state Leagues: 10 WAFL⁴⁶ teams, 10 SANFL⁴⁷ and 22 VFL²⁹ with 22 players per team = 1848 Women's State Leagues: 6 WAFL⁴⁶, 8 SANFL⁴⁷ and 12 VFL²⁹ teams with 22 players per team = 572</p> <p>Cricket = 272 athletes Men's one day domestic competition has 6 teams of 25 players⁴⁸ = 150 Women's National Cricket League (WNCL) has 7 teams with 25 players⁴⁹ = 175 <i>Minus n = 53 Tier 4+5 athletes</i></p> <p>Rugby Union = 229 athletes 5 Australian teams in the Super Rugby Season⁵⁰, each with 36 athletes 6 Australian teams in the Super W⁵⁰, each with 22 athletes <i>Minus n = 83 Tier 4+5 athletes</i></p> <p>Rugby League = 558 athletes 16 men's teams with 32 players in each and 4 women's teams with 22 players⁵¹ <i>Minus n = 42 Tier 4+5 athletes (wheelchair athletes are not subtracted as there is no domestic league)</i></p>
	<p>~110,600,000 athletes are considered Highly Trained / National Level = 0.014% of the global population</p>	<p>~7,009 athletes in Australia are considered Highly Trained / National Level = 0.027% of Australian population</p>
<p>Tier 2 Trained / Developmental</p>	<p>19% of the US population was engaged in sports in 2019⁵² 12% of EU citizens are members of a sports club, while 7% of Europeans exercise at least five times per week⁵³ 26% of Australians are classified as 'Sport Participants' of which 70% train +3</p>	<p>26% of Australians are classified as 'Sport Participants' of which 70% train +3 times/week¹². = 4,677,400 individuals <i>Minus 8,729 athletes identified as Tier 3+</i></p>

	times/week (=18%) ¹² Minus 0.014% of the population identified as Tier 3+	
	~12 – 19% of the global population	4,668,671 individuals in Australia are considered Trained / Developmental = 18.2% of the Australian population
Tier 1 Recreationally active	Approximately 48% of Australians ⁵⁴ , 49% of Americans ⁵⁵ , 61% of the British population ⁵⁶ and 55% of Canadians ⁵⁷ meet the World Health Organisation’s guidelines for physical activity ⁵⁸ , and therefore ~54% of the global population fall between Tier 1-5. 54% minus 12 – 19% classified as Tiers 2+	Approximately 48% of Australians ⁵⁴ (12,336,000) meet the World Health Organisation’s guidelines for physical activity ⁵⁸ , minus 4,677,400 individuals classified as Tiers 2+
	~35 – 42% of the global population	7,764,000 individuals in Australia are considered Recreationally Active = 30% of the Australian population
Tier 0 Sedentary	46% of the global population are classified as sedentary ⁵⁵⁻⁵⁷	52% of Australians are reported to be sedentary ⁵⁴ .
	~46% of the population	13,208,000 of Australians are Sedentary = 52% of the Australian population

The number “starters” numbers for different sports are as follows. Basketball (n = 5), football (n = 11), American football (n = 11), rugby union (n = 15), rugby league (n = 13), cricket (n = 11).

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