

METHODOLOGY

In March 2015, in the first International Society for Sports Science in the Arab World (I3SAW) congress which was held in Oran (Algeria) Nadim Nassif, PhD, Assistant professor in Notre Dame University Lebanon, has presented a methodology aiming at ranking annually the 206 countries having NOC in all the sports recognized by Sportaccord (now GAISF) and others not yet recognized but generating massive revenues (ex: MMA, rugby league). To honor the I3SAW that gave him the opportunity to present his idea in a scientific congress, he first called this ranking the I3SAW ranking for countries in elite sport¹. **The name “World Ranking of Countries in Elite Sport” was officially established and copyrighted in August 18th, 2017.**

This methodology relies on the calculation of two coefficients that weight the different sports: **popularity and universality**. **Popularity** indicates the **international media ratings for each sport**. It shows to which extent a sport is covered and therefore attracts private and public funding and raises competition's level by engaging the most talented athletes. **Universality** takes into account the **number of all countries participating in a given sport**. The more there are countries participating, the more difficult it is for them to win in an event. For the competitions chosen, we use the official ranking made by the international federation of each sport. When there is no ranking available, we take the results of the last world championships and Olympics (if it is an Olympic sport. Otherwise we just take the World Championship) to date.

This **ranking** attributes a **pointing system** for every event, discipline and sport.

¹ The methodology of the I3SAW ranking for countries in elite sport was published in a scientific journal and several conference proceedings:

- Nassif, N. (2017) *Elite Sport Ranking of the “International Society of Sports Sciences in the Arab World”: An accurate Evaluation of all Nations’ Performances International Sports Competitions*. Athens Journal of Sport, Vol.4, N.1
- Nassif, N. (2017) *Measuring countries elite sport policies success in 2016*. Proceedings of the 2nd International Congress of the International Society of Sport Sciences in the Arab World (I3SAW), “Sport Sciences in the Arab World and Europe: Current State and Future Perspectives”, 24-27 April 2017, Stirling-Great Britain : I3SAW editions, pp.47-49.
- Nassif, N. (2016) *I3SAW Elite Sport Ranking: Evaluating All the National Olympic Committees Performances in International Sport Competitions*” in 2016 International Convention on Science, Education and Medicine in Sport (ICSEMIS 2016).

Table 1. Glossary

Term	Definition	Examples
Sport	A group of disciplines or events that belong to the same international federation	Aquatics
Discipline	A branch in a sport comprising one or more events	Swimming is a discipline in the sport of aquatics
Event	A competition in a sport or discipline that gives rise to a ranking	Men 50-M freestyle is an event of the discipline of swimming that belongs to the sport of aquatics

To be able to rank the 206 countries having National Olympic Committees, Nassif adopted a different methodology than the one of the Olympic Medal Table (only 84 countries were able to collect medals in the combined results of the 2012 Summer and 2014 Winter Olympics).

The starting point of this ranking is a weighted pointing system that replaces the three-medal Olympic system in any event, discipline or sport.

Table 2. Weighted pointing system

Rank in an event, discipline or sport	Basic Number Points awarded on the basis of number of Olympic committees: NP_basic	Weight (Formula 1 2003-2009 scale)	Weighted basic number of points: NP_weighted
1	206	10	2060
2	205	8	1640
3	204	6	1224
4	203	5	1015
5	202	4	808
6	201	3	603
7	200	2	400
8	199	1	199
9	198	1	198
10	197	1	197
11	196	1	196
.....
206	1	1	1

To reward the top eight countries, Nassif introduced a weighting coefficient inspired from the Formula 1 scores, which were adopted between 2003 and 2009. By multiplying NP_basic by 10 (gold medal) for the first ranked, by eight for the second (silver medal), and by six for the third (bronze medal), we will deny a country having athletes reaching the ninth and tenth positions (scoring 391 points) come ahead of the champion's country that receives now a score of 2040. All those ranked eighth and above will obtain points that decrease from 199 to 1. If, for example, there are only 200 countries participating, the last of which will obtain 7 points. If there are 100, the last will obtain 107 points. The points earned in each event were added to determine the ranking of countries in each event.

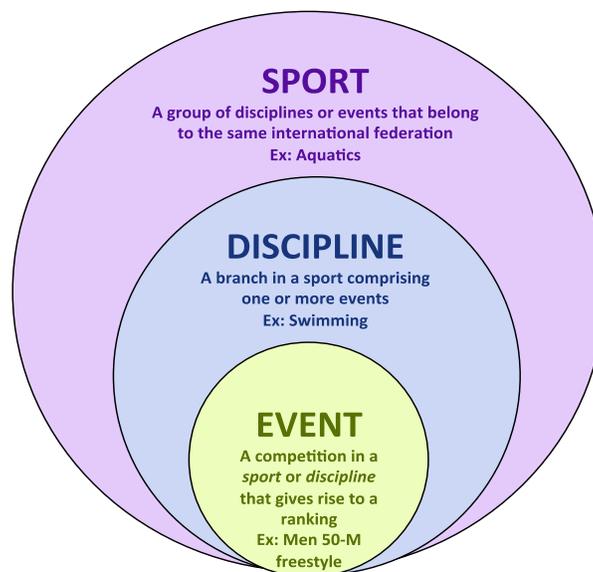
On that basis, given an event E, we obtain a total number of points per event for each country by summing up the points received by its athletes in that event. A ranking would result with a

number of points attributed for each country in that event according to the scale of Table 2. Table 3 provides an example illustrating points, ranking, and scaled final number of points in an event E such as the 100 M, and 200 M in athletics

Table 3. *Example of ranking and scaled points granting for a country in an event E*

Ranking of athletes in event E	Points	Corresponding Ranking of countries in event E	Points
1 USA	2060	1. Brazil 2836 (1624+1212)	2040
2 Brazil	1640	2. USA (2040)	1640
3 Brazil	1224	3. France 1202 (1005+197)	1224
4 France	1015	4. Italy (993)	1015
5 Spain	800	5. Spain (800)	800
6 Italy	603		
7 Italy	400		
8 France	199		

The sum of the points of the events are computed by disciplines and the sum of the points of the disciplines are computed by sports



The points won in the ranking of each sport are multiplied by coefficients of **universality and popularity**.

For the **universality coefficient**, we will take into consideration whether a sport is part of the programs of the Olympics, ISF, FISU, CISM, IMGA, World Transplant Games Federation, Special Olympics, Deaflympics, Paralympics, the International Children's Games Association and the International Workers and Amateurs in Sports Confederation, which are also multisport organizations recognized by the International Olympic Committee having at multi-sport program.

For the popularity coefficient, we will first measure the frequent presence of the sports in each country's major websites by using a standard pointing system. The points will then be multiplied by a coefficient based on the Gross National Income of each country. The popularity coefficient of a sport will be equal to the sum of the points it gathered in all the countries.

**THE COEFFICIENTS OF EACH SPORT IN THE WORLD RANKING OF COUNTRIES
IN ELITE SPORT METHODOLOGY WILL BE THE SUM OF ITS UNIVERSALITY
AND POPULARITY COEFFICIENTS**

Table 5. *Example of sport coefficients*

Sports	Universality	Popularity	Total = Universality + Popularity
Athletics	16.7	6	22.7
Aquatics	15.7	6	21.7

**THE POINTS WON BY EACH COUNTRY IN EACH OF THE SPORTS AFTER THE
COEFFICIENTS MULTIPLICATION WERE ADDED TO OBTAIN THEIR TOTAL
AMOUNT OF POINTS**

Table 6. Total number points computed for each country before the final ranking

	USA	FRANCE	GREAT BRITAIN
Wushu	470. 4	453.6	429.6
Biathlon	831.6	6888	760.2
Aquatics	36256	3344	14220.8
Basketball	56650	33660	5115
...
TOTAL	536674.9	130 764	323 508.1

The final ranking was done according to the “summed” total amount of each country.

These will be the sports and disciplines considered for the 2018 World Ranking of Countries in Elite Sport:

- **Air sports:** parachuting, aeromodelling, ballooning, Gliding, Hang gliding
- **American football:** American football, flag football, beach flag
- **Aquatics:** Diving, swimming, synchronized swimming, water polo, open water swimming, high diving
- **Archery**
- **Armwrestling**
- **Athletics**
- **Australian rules football**
- **Automobile:** formula 1, World endurance championship, GT, IMSA, WRC, Rally Dakkar, WTCC, Supercars, Indy, Nascar, Rallycross
- **Badminton**
- **Bandy**
- **Baseball/Softball:** Baseball, softball
- **Basketball:** Basketball, 3x3 basketball
- **Biathlon**
- **Billiards:** snooker, pool, carom
- **Brazilian Jujitsu**
- **Bobsled:** bobsleigh, skeleton
- **Bodybuilding**
- **Boules:** boules lyonnaise, pétanque, bocce
- **Bowling**

- **Boxing**
- **Bridge**
- **Canoe-kayak:** Canoe sprint, canoe marathon, canoe polo, canoe slalom wildwater, canoe freestyle, Ocean racing
- **Casting**
- **Cheer**
- **Chess**
- **Climbing and mountaineering:** Mountaineering, Ice climbing, skyrunning
- **Cricket**
- **Crossfit**
- **Curling**
- **Cycling:** Indoor cycling, BMX, Cyclo cross, Mountain bike, road cycling, track cycling, trial biking
- **Dancing**
- **Darts**
- **Dodgeball**
- **Dragon boat**
- **Draught**
- **Equestrian:** Dressage, Endurance, Eventing, jumping, Driving, Reining, Vaulting
- **Esports**
- **Fencing**
- **Fistball**
- **Floorball**
- **Flying disc**
- **Football:** football, futsal, beach soccer, interactive football
- **FootGolf**
- **Go**
- **Golf**
- **Gymnastics:** artistic gymnastics, gymnastics aerobics, rhythmic gymnastics, trampoline, acrobatic
- **Handball:** beach handball, handball
- **Horse racing**
- **Hockey:** hockey, indoor hockey
- **Ice Hockey**
- **Ice stock**
- **Judo**
- **Jujitsu**
- **Kabbadi**
- **Karate**
- **Kendo**
- **Kettlebell Lifting**
- **Kickboxing**
- **Korfball**
- **Lacrosse:** Indoor, outdoor
- **Lifesaving**
- **Luge**

- **Minigolf**
- **Mixed Martial Arts**
- **Modern Pentathlon:** Modern pentathlon, Tehtathlon, Triathle, Biathle, Laser-ru
- **Motor Racing:** Moto GP, Motocross, Trial, Enduro, Rallies, Track Racing
- **Muay Thai**
- **Netball**
- **Obstacle racing**
- **Orienteering:** foot orienteering, mountain bike orienteering, ski orienteering, trail orienteering
- **Pelota Vasca**
- **Poker**
- **Pole Sports**
- **Polo**
- **Powerboating**
- **Powerlifting**
- **Roller sports:** Roller aggressive, roller artistic, roller derby, roller hockey, roller speed, skateboard, inline alpine, inline downhill, inline freestyle, inline hockey
- **Racquetball**
- **Rollersports**
- **Rowing**
- **Rugby League**
- **Rugby Union:** Rugby, Rugby Sevens
- **Sailing:** fleet racing, match racing, America's cup, ocean racing
- **Sambo**
- **Savate**
- **Sepak Takraw**
- **Shooting**
- **Skating:** figure skating, short track speed skating, speed skating, synchronized skating
- **Skiing:** Alpine skiing, cross country skiing, freestyle skiing, Nordic combined, ski jumping, snowboarding, speed skiing, grass skiing, telemark
- **Ski Mountaineering**
- **Sleddog**
- **Soft tennis**
- **Sport climbing**
- **Sport fishing**
- **Squash**
- **Sumo**
- **Surf:** Surfing, SUP, Bodysurfing, Wakesurfing, Longboard, Bodyboard, kneeboard
- **Table tennis**
- **Table soccer**
- **Taekwondo:** fighting, poomsee
- **Tennis:** tennis, beach tennis
- **Triathlon:** triathlon, winter triathlon
- **Tug of War**
- **Underwater sports:** Apnoea, Aquathlon, Finswimming, Underwater hockey, Orienteering, Underwater Rugby, Spearfishing, Sport Diving, Visual, Target shooting

- **Volleyball:** volleyball, beach volleyball
- **Waterskiing:** Water skiing, Wakeboard
- **Weightlifting**
- **World's Strongest man**
- **Wrestling:** Freestyle, Greco-roman
- **Wushu**

The World Ranking of Countries in Elite Sport will be made and follow the same methodology every year. Therefore, new sports might be added.