

## FIBA World Ranking Men, presented by Nike Detailed Examples

### Examples of Method Stage 1

1. When Slovenia beat Spain in the Semi-Final of FIBA EuroBasket 2017, the basis points (BP) awarded for this game were 750 to Slovenia and 250 to Spain due to the Slovenians' 20-point margin of victory (92-72). The home or away points (HAP) were 0 as the game was played at a neutral venue. Pre-game, Spain were ranked #2, with an average ranking of 72 across all teams (according to the ranking's new system). Therefore, this gives an opposition ranking points (ORP) of  $1.5 \times (72 - 2) = 1.5 \times 70 = 105$ . Therefore the final rating points (RP) for Slovenia from this game are: **RP= BP+ HAP+ ORP = 750 + 0 + 105 = 855**. Spain obtained 250 basis points because they lost by 20 points. The home or away points were 0. Slovenia were ranked #11 pre-game. This gives an opposition ranking points of  $1.5 \times (72 - 11) = 1.5 \times 61 = 91.5$ . Therefore, the final rating points for Spain from this game are: **RP= BP+ HAP+ ORP = 250 + 0 + 91.5 = 341.5**.
2. When Argentina beat Puerto Rico in the Group Phase of the FIBA AmeriCup 2022, the basis points awarded for this game were 700 to Argentina and 300 to Puerto Rico due to Argentina's 13-point margin of victory (99-86). The home or away points (HAP) were 0 as the game was played at a neutral venue. Pre-game, Puerto Rico were ranked #19, with an average of 83 across all teams (according to the ranking's new system). Therefore this gives an opposition ranking points (ORP) of  $1.5 \times (83 - 19) = 1.5 \times 64 = 96$ . Therefore, the final rating points for Argentina from this game are: **RP= BP+ HAP+ ORP = 700 + 0 + 96 = 796**. Puerto Rico obtained 250 basis points because they lost by 13 points. The home or away points were 0. Argentina were ranked #7 pre-game. This gives an opposition ranking points of  $1.5 \times (83 - 7) = 1.5 \times 76 = 114$ . Therefore, the final rating points for Canada from this game are: **RP= BP+ HAP+ ORP = 300 + 0 + 114 = 414**.
3. When Rwanda beat Angola in the Group Stage of the FIBA Afrobasket 2021, the basis points (BP) awarded for this game were 650 to Rwanda and 350 to Angola due to the Rwandans' 3-point margin of victory (71-68). The home or away points (HAP) were -50 for Rwanda as the game was played in Rwanda. Pre-game, Rwanda were ranked #33, with an average ranking of 83 across all teams (according to the ranking's new system). Therefore, this gives an opposition ranking points (ORP) of  $1.5 \times (83 - 33) = 1.5 \times 50 = 75$ .

Therefore the final rating points (RP) for Rwanda from this game are: **RP= BP+ HAP+ ORP = 650 - 50 + 75 = 675**. Angola obtained 350 basis points because they lost by 3 points. The home or away points were 50 as the game was played in Rwanda. Rwanda were ranked #95 pre-game. This gives an opposition ranking points of  $1.5 \times (83 - 95) = 1.5 \times -12 = -18$ . Therefore, the final rating points for Angola from this game are: **RP= BP+ HAP+ ORP = 350 + 50 - 18 = 382**.

Note that in all examples, the opposition ranking points use the rankings according to the new FIBA World Ranking Men, presented by Nike, applied to historical data. This is necessary because the new ranking system ranks more teams than the previous competition-based ranking system, and therefore rankings are needed for all teams.

## Examples of Method Stage 2

1. For the Slovenia v Spain game in the example presented in stage 1 of the calculation, the competition (C) is the FIBA EuroBasket, so the weight would be  $C = 1$  and the stage (S) is a Final Tournament, so  $S = 1$ . The round (R) is the Semi-Final, so  $R = 6$  for the winning team (Slovenia) and  $R=1$  for the losing team (Spain). The final weight (W) would depend on the date that the new FIBA World Ranking Men, presented by Nike, was being calculated, because the time decay (TD) will change as the game becomes less recent. If the rating was being calculated in October 2023, then the game would have been played between between 6 and 8 years previously so the time decay would be  $TD = 0.25$ . This would give a weight for this game of  $W = TD \times C \times S \times R = 0.25 \times 1 \times 6 \times 1 = 1.5$  for Slovenia and  $W = TD \times C \times S \times R = 0.25 \times 1 \times 1 \times 1 = 0.25$  for Spain.
2. For the Argentina v Puerto Rico game in the example presented in stage 1 of the calculation, the competition (C) is the FIBA AmeriCup, so the weight would be  $C = 0.8$ , the stage (S) is a Final Tournament and the round (R) is the Group Phase, so  $S = 1$ , and  $R = 1$  (for both teams). The final weight (W) would depend on the date that the new FIBA World Ranking Men, presented by Nike, was being calculated, because the time decay (TD) will change as the game becomes less recent. Because, the FIBA AmeriCup was delayed from 2021 due to COVID-19, the match is treated as it if were played in 2021 before time discounting is applied. If the rating was being calculated in October 2023, then the (adjusted date of the) game would have been two and four years previously, so the time decay would be  $TD = 0.75$ . This would give a weight for this game of  $W = TD \times C \times S \times R = 0.75 \times 0.8 \times 1 \times 1 = 0.6$  (for both teams).
3. For the Rwanda v Angola game in the example presented in stage 1 of the calculation, the competition (C) is the FIBA Afrobasket Cup 2021 so the weight would be  $C = 0.35$ , the stage (S) is a Final Tournament and the round (R) is the Group Stage (Round 1). This means that  $S = 1$  and  $R = 1$  (for both teams). The final weight (W) would depend on the date that the new FIBA World Ranking Men, presented by Nike, was being calculated, because the time decay (TD) will change as the game becomes less recent. If the rating was being calculated in October 2023, then the game would have been played between 2 and 4 years previously, so the time decay would be  $TD = 0.75$ . This would give a weight for this game of  $W = TD \times C \times S \times R = 0.75 \times 0.35 \times 1 \times 1 = 0.2625$  (for both teams).

To calculate the final **team ratings** the penalized weighting is calculated as:

$$\frac{\sum i RPi \times Wi}{\max(K, \sum i Wi)}$$

Where the Greek symbol  $\Sigma$  denotes a sum which is over all the historical games (indexed by  $i$ ) played by the team in the previous 8 years and for each game  $i$ ,

**$RPi$**  = Rating points for game  $i$

**$Wi$**  = Weight of game  $i$

The constant  **$K$**  is a mathematical penalty term that ensures that teams who have played few games are not ranked too highly because of small sample size.

To calculate the new FIBA World Ranking Men, presented by Nike, we then simply rank the teams according to the team ratings calculated above.

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