

## 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 800 to Slovenia and 200 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 76 across all teams (according to the ranking's new system). Therefore, this gives an opposition ranking points (ORP) of  $1.5 \times (76 - 2) = 1.5 \times 74 = 111$ . Therefore the final rating points (RP) for Slovenia from this game are:  **$RP = BP + HAP + ORP = 800 + 0 + 111 = 911$** . Spain obtained 200 basis points because they lost by 20 points. The home or away points were 0. Slovenia were ranked #10 pre-game. This gives an opposition ranking points of  $1.5 \times (76 - 10) = 1.5 \times 66 = 99$ . Therefore, the final rating points for Spain from this game are:  **$RP = BP + HAP + ORP = 200 + 0 + 99 = 299$** .
  
2. When the Virgin Islands beat Canada in the Group Phase of the FIBA AmeriCup 2017, the basis points awarded for this game were 700 to the Virgin Islands and 300 to Canada due to the Virgin Islanders' 12-point margin of victory (83-71). The home or away points (HAP) were 0 as the game was played at a neutral venue. Pre-game, Canada were ranked #20, with an average of 76 across all teams (according to the ranking's new system). Therefore this gives an **opposition ranking points (ORP) of  $1.5 \times (76 - 20) = 1.5 \times 56 = 84$** . Therefore, the final rating points for the Virgin Islands from this game are:  **$RP = BP + HAP + ORP = 700 + 0 + 84 = 784$** . Canada obtained 300 basis points because they lost by 12 points. The home or away points were 0. The Virgin Islands were ranked #55 pre-game. This gives an **opposition ranking points of  $1.5 \times (76 - 55) = 1.5 \times 21 = 31.5$** . Therefore, the final rating points for Canada from this game are:  **$RP = BP + HAP + ORP = 300 + 0 + 31.5 = 331.5$** .
  
3. When Iran beat Lebanon in the Quarter-Finals of the FIBA Asia Cup 2017, the basis points (BP) awarded for this game were 700 to Iran and 300 to Lebanon due to the Iranians' 10-point margin of victory (80-70). The home or away points (HAP) were +70 for Iran and -70 for Lebanon as the game was played in Lebanon. Pre-game, Lebanon were ranked #59, with an average ranking of 76 across all team (according to the ranking's new system). Therefore, this gives an opposition ranking points (ORP) of  $1.5 \times (76 - 59) = 1.5 \times 17 = 25.5$ .

Therefore the final rating points (RP) for Iran from this game are: **RP= BP+ HAP+ ORP = 700 + 70 + 25.5 = 795.5**. Lebanon obtained 300 basis points because they lost by 10 points. The home or away points were -70 as the game was played in Lebanon. Iran were ranked #22 pre-game. This gives an **opposition ranking points of  $1.5 \times (76 - 22) = 1.5 \times 54 = 81$** . Therefore, the final rating points for Lebanon from this game are: **RP= BP+ HAP+ ORP = 300 - 70 + 81 = 311**.

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  $C = 1$ , the stage (S) is a Final Tournament and the round (R) is the Semi-Final, so  $S = 1$  and  $R = 1.75$ . 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 November 2017, then the game would have been played in that year so the time decay would be  $TD = 1$ . This would give a weight for this game of  $W = TD \times C \times S \times R = 1 \times 1 \times 1.75 \times 1 = 1.75$ .
2. For the Virgin Islands v Canada 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  $R = 1$ . 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 November 2017, then the game would have been played in that year, so the time decay would be  $TD = 1$ . This would give a weight for this game of  $W = TD \times C \times S \times R = 1 \times 0.8 \times 1 \times 1 = 0.8$ .
3. For the Iran v Lebanon game in the example presented in stage 1 of the calculation, the competition (C) is the FIBA Asia Cup 2017 so the weight would be  $C = 0.4$ , the stage (S) is a Final Tournament and the round (R) is the Quarter-Final. There was no Round of 16 for this competition so  $S = 1$  and  $R = 1.25$ . 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 November 2017, then the game would have been played in that year, so the time decay would be  $TD = 1$ . This would give a weight for this game of  $W = TD \times C \times S \times R = 1 \times 0.4 \times 1 \times 1.25 = 0.5$ .

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

$$\text{Team Rating} = \frac{\sum_i RP_i \times W_i}{\max(K, \sum_i W_i)}$$

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  $i$ ,

$RP_i$  = Rating points for game  $i$

$W_i$  = 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.