

The FIVB logo, consisting of the letters 'FIVB' in a bold, sans-serif font with a curved line underneath.

NEW FIVB
VOLLEYBALL
WORLD
RANKING
FOR SENIOR
NATIONAL
TEAMS

EXAMPLES

A stylized world map composed of various shades of blue and white, showing the outlines of continents and countries. The map is positioned in the lower half of the page, below the 'EXAMPLES' title.

Definition

Probabilities of 3-0 / 3-1 / 3-2 / 2-3 / 1-3 / 0-3	P1 / P2 / P3 / P4 / P5 / P6
Normal distribution with average 0 and standard deviation 1	$\sim N(0,1)$
Strength difference between the teams	Δ
Standard scaling factor	8
Teams World Ranking scores	WRS1 / WRS2
The cut-points in the normal distribution that represent the average outcome of a match between two equal strength opponents derived from the actual match results of the past decade	C1 / C2 / C3 / C4 / C5
Expected Match Result	EMR
Set Score Variant	SSV
Match Weight Factor	MWF

FICTIOUS MATCHES EXAMPLES AND IMPACT ON WORLD RANKING SCORES

Before the match at the FIVB Volleyball World Championship, Brazil is ranked number 1 with a 415 WR score and Japan is ranked number 11 with a 192 WR score.

$$\Delta = 8 * (WRS1 - WRS2) / 1000 = 8 * (415 - 192) / 1000 = 1.784$$

$$C1 = -1.060$$

$$C2 = -0.394$$

$$C3 = 0$$

$$C4 = 0.394$$

$$C5 = 1.060$$

$$P1 = \text{Probability of } \mathbf{3 - 0} \text{ result} = \sim N(0,1)(C1 + \Delta) = 76.5\%$$

$$P2 = \text{Probability of } \mathbf{3 - 1} \text{ result} = \sim N(0,1)(C2 + \Delta) - \sim N(0,1)(C1 + \Delta) = 15.2\%$$

$$P3 = \text{Probability of } \mathbf{3 - 2} \text{ result} = \sim N(0,1)(C3 + \Delta) - \sim N(0,1)(C2 + \Delta) = 4.5\%$$

$$P4 = \text{Probability of } \mathbf{2 - 3} \text{ result} = \sim N(0,1)(C4 + \Delta) - \sim N(0,1)(C3 + \Delta) = 2.2\%$$

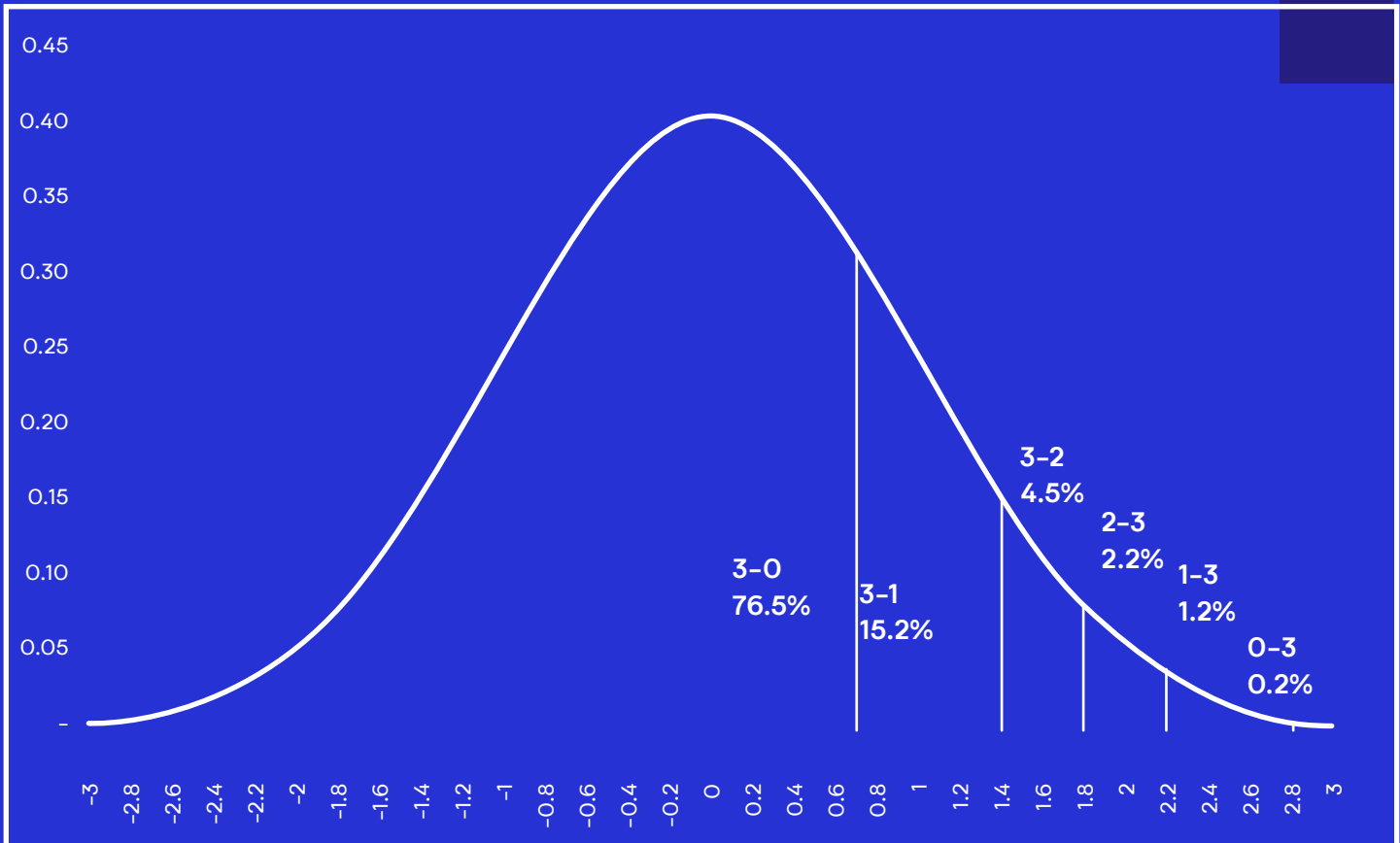
$$P5 = \text{Probability of } \mathbf{1 - 3} \text{ result} = \sim N(0,1)(C5 + \Delta) - \sim N(0,1)(C4 + \Delta) = 1.2\%$$

$$P6 = \text{Probability of } \mathbf{0 - 3} \text{ result} = 1 - \sim N(0,1)(C5 + \Delta) = 0.2\%$$

Match Result	Set Score Variant	Probability
3-0	+2	76.5%
3-1	+1.5	15.2%
3-2	+1	4.5%
2-3	-1	2.2%
1-3	-1.5	1.2%
0-3	-2	0.2%

$EMR = 76.5\% * (+2) + 15.2\% * (+1.5) + 4.5\% * +1 + 2.2\% * (-1) + 1.2\% * (-1.5) + 0.2\% * (-2) = +1.76$
 The expected match result is +1.76, which corresponds to a higher win probability for Brazil than for Japan.

MATCH ODDS BRASIL - JAPAN



**SCENARIO 1
BRAZIL 3-0 JAPAN**



The difference between the actual result (set score variant) and the expected match result gives the WR value.
WR value = SSV - EMR = +2 - (+1.76) = +0.24
The WR value is then multiplied by the match weight factor of the event and divided by the standard scaling factor to get the WR points.
WR points = WR value * MWF / 8 = +0.24 * 45 / 8 = +1.35

Brazil new WR score: 415 + 1.35 = 416.35
Japan new WR score: 192 - 1.35 = 190.65

The WR scores reflect the strength of each team, consequently there is now higher expectations on Brazil to perform in the next match.

**SCENARIO 2
BRAZIL 3-1 JAPAN**



The difference between the actual result (set score variant) and the expected match result gives the WR value.
WR value = SSV - EMR = +1.5 - (+1.76) = -0.26
The WR value is then multiplied by the match weight factor of the event and divided by the standard scaling factor to get the WR points.
WR points = WR value * MWF / 8 = -0.26 * 45 / 8 = -1.46

A key principle of the new FIVB World Ranking is that a team winning a match cannot lose WR points. Because Brazil delivered a lower performance than expected, the team is rewarded with the minimum WR points.
Brazil new WR score: 415 + 0.01 = 415.1
Japan new WR score: 192 - 0.01 = 191.9

**SCENARIO 3
BRAZIL 3-2 JAPAN**



The difference between the actual result (set score variant) and the expected match result gives the WR value.
WR value = SSV - EMR = +1 - (+1.76) = -0.76
The WR value is then multiplied by the match weight factor of the event and divided by the standard scaling factor to get the WR points.
WR points = WR value * MWF / 8 = -0.76 * 45 / 8 = -4.27

A key principle of the new FIVB World Ranking is that a team winning a match cannot lose WR points. Because Brazil delivered a lower performance than expected, the team is rewarded with the minimum WR points.
Brazil new WR score: 415 + 0.01 = 415.1
Japan new WR score: 192 - 0.01 = 191.9

**SCENARIO 4
BRAZIL 2-3 JAPAN**



The difference between the actual result (set score variant) and the expected match result gives the WR value.
WR value = SSV - EMR = -1 - (+1.76) = -2.76
The WR value is then multiplied by the match weight factor of the event and divided by the standard scaling factor to get the WR points.
WR points = WR value * MWF / 8 = -2.76 * 45 / 8 = -15.52

Brazil new WR score: 415 - 15.52 = 399.48
Japan new WR score: 192 + 15.52 = 207.52

The WR scores reflect the strength of each team, consequently there is now higher expectations on Japan to perform in the next match.

**SCENARIO 5
BRAZIL 1-3 JAPAN**



The difference between the actual result (set score variant) and the expected match result gives the WR value.
 $WR\ value = SSV - EMR = -1.5 - (+1.76) = -3.26$
 The WR value is then multiplied by the match weight factor of the event and divided by the standard scaling factor to get the WR points.
 $WR\ points = WR\ value * MWF / 8 = -3.26 * 45 / 8 = -18.34$

Brazil new WR score: $415 - 18.34 = 396.66$
 Japan new WR score: $192 + 18.34 = 210.34$

The WR scores reflect the strength of each team, consequently there is now higher expectations on Japan to perform in the next match.

**SCENARIO 6
BRAZIL 0-3 JAPAN**



The difference between the actual result (set score variant) and the expected match result gives the WR value.
 $WR\ value = SSV - EMR = -2 - (+1.76) = -3.76$
 The WR value is then multiplied by the match weight factor of the event and divided by the standard scaling factor to get the WR points.
 $WR\ points = WR\ value * MWF / 8 = -3.76 * 45 / 8 = -21.15$

Brazil new WR score: $415 - 21.15 = 393.85$
 Japan new WR score: $192 + 21.15 = 213.15$

The WR scores reflect the strength of each team, consequently there is now higher expectations on Japan to perform in the next match.

Match Result	Probability	Brazil WR points	Japan WR points
3-0	76.5%	+1.35	-1.35
3-1	15.2%	+0.01	-0.01
3-2	4.5%	+0.01	-0.01
2-3	2.2%	-15.52	+15.52
1-3	1.2%	-18.34	+18.34
0-3	0.2%	-21.15	+21.15