GC Advantage and the use of Scoring Fraction Percentages

While the use of Scoring Fraction Percentage ('SF%') is a fair way to compare the results of two scores between players of different handicaps played in a game played under GC Advantage conditions (whether using Starting Scores or Target Scores), the rounding errors inherent in the process mean that it can potentially lead to inappropriate conclusions when the percentages are then aggregated for the games in a block for the purposes of calculating a tie-breaker. To illustrate the problem consider the following example, which was taken from an actual Advantage competition between some high handicappers. The players A, B, C and D had handicaps of 12, 14, 9 and 9 respectively.

Result vs:	A	B	C	D	Wins
A		7/7 - 6/7	2/6 - 7/7	6/6 - 2/7	2
B	6/7 - 7/7		7/7 - 8/9	7/7 - 7/9	2
C	7/7 - 2/6	8/9 - 7/7		5/7 - 7/7	1
D	2/7 - 6/6	7/9 - 7/7	7/7 - 5/7		1

In order to determine the block winner, a tie-breaker is therefore required to decide between players A and B. The direct use of the SF% table then leads to the following:

Result vs:	A	B	C	D	Wins	Net SF%
A		100 - 86	33 - 100	100 - 29	2	+18
B	86 - 100		100 - 89	100 - 78	2	+19
C	100 - 33	89 - 100		71 - 100	1	+27
D	29 - 100	78 - 100	100 - 71		1	-64

However, the conclusion that player B is the winner is inappropriate, since it arises from the rounding errors inherent in the use of the SF% table. A more careful calculation reveals the following instead:

Result vs:	A	B	C	D	Wins	Exact net SF
A		7/7 - 6/7	2/6 - 7/7	6/6 - 2/7	2	+4/21 ~= +19.05%
B	6/7 - 7/7		7/7 - 8/9	7/7 - 7/9	2	+4/21 ~= +19.05%
C	7/7 - 2/6	8/9 - 7/7		5/7 - 7/7	1	+17/63 ~= +26.98%
D	2/7 - 6/6	7/9 - 7/7	7/7 - 5/7		1	-41/63 ~= -65.08%

In this case the exact Scoring Fraction ('SF') is calculated for each score and the difference between the SF for each player taken, and then those differences are summed. The appropriate conclusion is that players A and B are still tied when comparing their Scoring Fractions accurately, and therefore the third tie-breaker is required to separate them, in this case wins vs. those tied (i.e. 'who beat whom'). This leads to the conclusion that the winner is in fact **player A**.

The calculation of exact SF values is unfortunately rather impractical without the use of a calculator or computing device of some kind, especially for larger blocks. Tournament managers are therefore advised to have a calculating device available to check when SF% values are close (i.e. if the net SF% difference is less than the number of games summed).

It is also interesting to note that if the "relative net hoops" in this example are calculated instead (i.e. the difference between the two players of the hoops-scored-vs-target for each), then this also avoids any rounding errors and it also leads to equal values, and thus leads to determining player A again as the winner under the third tie-breaker.

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