Tie breakers for round-robins

The worst part of a round-robin the possibility of a three-way tie between teams that have all beaten each other. (E.g., A beats B, B beats C, and C beats A). One unlucky team will have to finish 3rd when they only lost one game. This is the very reason why the UPA tries to avoid pool play when the third place team can get eliminated. So, for example, in a tournament that is organized into 4 pools of 5, where the top 2 teams advance, a team can lose one game, to the best team, and be denied the chance to finish in the top eight.

Nevertheless, while the UPA tries to minimize such situations, they all can't be avoided. The following are the UPA Standard set of round-robin tie breaker rules.

Rule 1. A given tie-breaker rule applies equally to all the teams that are tied. For an example of this application, see example 3.1.

Rule 1a. If, after the application of a given rule, all of the teams are still tied, go to the next rule. For an example of this application, see example 3.3.

Rule 1b. If not all teams, but one or more subgroups of the teams are tied, separate these teams into groups and go back to rule 2 with each of the groups individually. For an example of this application, see example 3.2.

Rule 2. Won-loss records, counting only games between the teams that are tied.

Example 2.1. A and B are tied for third place at 4-2, and during the tournament, A has beaten B. Then, A gets third place and B gets fourth place. When only two teams are involved, this rule is commonly called "head-to-head."

Example 2.2. A, B, and C, are tied for first place; they are all 3-2 after the six team round-robin. A has beaten both B and C, while B has beaten C. The records among the three teams only are: A is 2-0, B is 1-1, and C is 0-2. A finishes first, B finishes second, and C finishes third.

Example 2.3. A, B, and C are in a three-way tie. A has beaten B, B has beaten C, C has beaten A. The relevant records for all three teams are 1-1. This tie-breaker won't work, and you must go on to tie-breaker #3.

Rule 3. Point differentials, counting only games between the teams that are tied.

Example 3.1. A, B, C are in a three-way tie for first place. A has beaten B 15-10, B has beaten C 15-12, and C has beaten A, 15-13. A's point differential, then, is +5 and -2, which equals +3. B's is -2 and C's is -1. A finishes first, C finishes second, and B finishes third. Note that the three point differentials, in this case, +3,-2,-1, must always add up to zero. Note also that we do not use the point differential to choose the winner and then go "head to head" to choose the other two. This would be a violation of Rule #1, which says that we must apply a tie-breaker rule equally to all the teams that are tied.

Example 3.2. A, B, C are in a three-way tie for first place. A has beaten B 15-11, B has beaten C 15-12, and C has beaten A, 15-13. A's point differential, then, is +4 and -2, which equals +2. B's is -1 and C's is -1. A takes first place. B and C are still tied. When, after the application of a rule, there are still teams that are tied, we go back to rule 2. Since B beat C, B takes 2nd place, and C takes 3rd. At this point we do not go onto rule 4.

Example 3.3. A, B, C are in a three-way tie for first place. A has beaten B 15-13, B has beaten C 16-14, and C has beaten A, 15-13. A's point differential, then, is +2 and -2, which equals +0. B's is 0 and C's is 0. This tie-breaker can not be applied, go on to tie-breaker rule 4, unless there are only three teams in the pool to begin with, in which case you should have played an extra point. See the discussion on three-team pools on page 7).

Rule 4. Point differentials, counting games against all common opponents.

Example 4.1. As in example 3, above, A, B, C are in a three-way tie for first place in a four team pool. A has beaten B 15-13, B has beaten C 16-14, and C has beaten A, 15-13. All three point differentials are 0. Suppose all of them have played D; A beat D 15-9, B beat D 15-7, and C beat D 15-12. B takes first place (because their point differential against the common opponent, D, was +8), A takes second (by beating D by six goals), and C takes third (beating D by three goals).

4.a. Multiple games against common opponents are averaged.

Example 4.2. Assume all of example 1, but that, for some reason, B beat D twice, 15-7 and 15-12. Take the average of the scores and only count it once, thus, we would calculate the point differential as though B beat D once, by a score of 15-9.5. Then A takes first (point differential of +6), B takes second (we count, as a point differential, the score of 15-9.5, which is 5.5), and C takes third (beating D by three goals).

5. Point differentials, counting games against all common opponents, excluding each team's best and worst differentials. This is about the same as Rule 4, except that the best and worst scores are eliminated. This eliminates "blowouts" with which the teams in question might have been involved.

6. Points scored, counting only games among the teams that are tied. (Note to UPA officials. I thought long and hard about whether we should count most points scored, or least points allowed. There is really no good reason why one should count more than the other. The reason why I chose points scored, is that it, at least, provides an incentive for the game to start on time, and to minimize all the things that delay games (extra long time outs, excessive foul calling, procrastinating at the beginning of games and at the beginning of the second half, stalling in the hope that the game is capped, stalling because the team is tired, etc.)

7. Points scored, counting games against all common opponents.

8. Points scored, counting games against all common opponents, excluding each team's best and worst scores.

9. Sum of the square roots of the absolute values of the point differentials, counting games against all common opponents. This has the effect of minimizing the effect of blowouts without totally excluding them from consideration. Thus, as described in the example below, a team that wins its games by the scores of 15-8 and 15-10 will have a better differential that a team that wins 15-12 and 15-4. (One might assume that at a certain point, the losing team in the 15-4 game gave up since points became somewhat irrelevant to them.) It also has the added benefit of making it almost mathematically impossible to still be tied after this rule, unless all the scores of the teams involved are identical.

Strictly speaking, mathematically, the computation regarding losses should be subtracted. Here's an example:

A beats W 15-12	B beats W 15-8
A beats X 15-4	B beats X 15-8
A lost to Y 15-8	B lost to Y 15-12
A lost to Z 15-8	B lost to Z 15-4

Suppose, further, that these were the only games involving common opponents of A and B, and that all the tie-breakers are the same through the first eight rules. Then, applying this rule, A's differentials are 3, 11, -7 and -7. The tie-breakers, then, are

A's tie breakers = sqrt(3) + sqrt(11) - sqrt(7) - sqrt(7)
B's tie breakers = sqrt(7) + sqrt(7) - sqrt(11) - sqrt(3)

A's tie breakers are approximately -0.2 while B's tie breakers are approximately +0.2.

10. Flip a disc. As a last resort, discs should be flipped. Two discs should be flipped with one team calling "odd" or "even."