The Bullet Trap Practical Shooting Adventure Hit Factor Scoring

The match results might look puzzling if you are not familiar with Hit Factor scoring. Some scoring methods are focused on shooting accuracy (bullseye) where the shooter with the highest total points is the winner. Other methods reward shooting speed (steel challenge) where the shooter with the fastest total time is the winner.

Our game, Practical Shooting, looks at both aspects by using Hit Factor scoring. It's not the highest score or the fastest time that determines the winner, but the best shooting efficiency. That is, points scored per second of shooting. It all starts with the target.



The standard target has 3 scoring areas A, C, and D. Each area has a point value as follows

Area	Ctrfire	Rimfire
А	5	5
С	4	3
D	2	1

Each target is usually shot twice so the maximum possible score is 10 points and the Stage Value is 10 times the number of targets. When the shooter finishes the stage, the points scored on each targat are tallied and recorded along with any penalty points and the time it took to complete the stage.

For any given stage, the shooter's point score is divided by the time needed to complete the stage, yielding the Hit Factor. You can find this in the Stage Results portion of the score sheets and shown here.

Stage Results - Combined												
Place	Name	No.	Class	Div	PF	Points	Pen	Time	Hit Factor	Stage Pts	Stage %	
1	Shooter A			0	Maj	65	0	15.26	4.2595	70.0000	100.00%	
2	Shooter B			0	Maj	70	0	18.13	3.8610	63.4511	90.64%	

The Bullet Trap Practical Shooting Adventure Hit Factor Scoring

If the match consisted of just one stage, the shooter with the highest Hit Factor (third to last column) would be the winner. But in a multi-stage match, you can't simply add up the hit factors since the maximum points possible, or Stage Value, can vary for each stage. So the hit factor is used to calculate how much of the Stage Value each shooter has earned relative to the best shooter (highest hit factor) in each stage. That's where the "Stage Pts" and "Stage %" columns in the Stage Results come into play.

In this example, the Stage Value is 70 points. Shooter A finishes in 15.26 seconds and scores 65 points for a hit factor of 65/15.26=4.2595, and Shooter B scores all 70 points, but takes 18.13 seconds to finish for a hit factor of 70/18.13=3.8610. Shooter A is the stage winner.

The shooters are awarded a portion of the Stage Value points based on the percentage of the stage winner's Hit Factor they achieve (the "Stage %" column). The stage winner (top hit factor) always gets 100% of the Stage Value. The other shooters get a percentage equal to their hit factor divided by the top hit factor which for Shooter B would be 3.8610/4.2595 or 90.64%. This is used to calculate the Stage Points ("Stage Pts" column) earned by each shooter. So for this stage, Shooter A gets 70 points (100% of the Stage Value) and Shooter B gets 63.4511 points (90.64% of the Stage Value).

Now add a second stage (not shown) with an 80-point Stage Value and use round numbers to simplify the math. Shooter A gets a perfect score of 80 points in 15 seconds for a hit factor of 5.333. Shooter B scores a 76 in 10 seconds for a 7.600 hit factor. This time, Shooter B gets 100% of the Stage Value (80 Stage Pts) while Shooter A gets 5.333/7.600=70.02% of the Stage Value (56.14 Stage Pts).

The Match Score then is the sum of the Stage Points.

Shooter A: 70.00 + 56.14 = 126.14 Shooter B: 63.45 + 80.00 = 143.45

And Shooter B wins the match.

A lot of number crunching to be sure. Fortunately, we have a scoring app that keeps track of everything and does all the math so we can concentrate on having fun.