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Team benches in most collegiate hockey arenas are placed next to each other along one side of the rink. The penalty box is at center ice on the opposite side of the rink. Middlebury College in the New England Small College Athletic Conference (NESCAC) and Norwich University in the Eastern College Athletic Conference (ECAC), long-time ice hockey rivals, are alike in several respects. Both schools are located in the state of Vermont. Both teams have recently won National Collegiate Athletic Association (NCAA) men's Division III national championships, Norwich in 2002-03 and Middlebury in 2003-04 and again in 2004-05. And, both teams play in rinks (Kenyon Arena at Middlebury and Kreitzberg Arena at Norwich) with team benches, one on each side of the rink, and a penalty box that is *closer* to one end of the rink than the other. That is, during the first and third periods of each home game, home team skaters emerging from the penalty box are closer to the opposing team's goal.

The proximity of the penalty box to the opposing team's goal seemingly gives the home team an advantage in two of the three periods played, arguably creating more scoring chances for the home team. A home team skater whose penalty has just expired might be inclined to signal his teammates to make a long, home-run type of pass that the skater can take on a quick break into the offensive zone for a shot on goal. Middlebury College's rink configuration with the penalty box located on one side of the red (center) line is unique to all schools in NESCAC; Norwich University's similar configuration is unique to all schools in the ECAC.

The purpose of this brief note is to determine whether the average number of even-strength goals scored by the home team within a minute following the expiration of a penalty on the home team (hereafter, "after penalties") is greater than the average number of even-strength goals scored (per minute) by the home team at any other time during periods 1 and 3 (hereafter, "before penalties").

Table 1 summarizes the number of even-strength goals scored by Norwich University in periods 1 and 3 combined for each home game in 2004-05. (All data are from www.collegehockeystats.net.) We note that the sum of the two times at even strength before and after penalties [columns (2) and (5) in Table 1] do not always add up to 40 minutes (or two 20-minute periods). We exclude the number of minutes (during periods 1 and 3) when one team is on a power play (i.e., one team enjoys a one- or two-man advantage), but we include the number of minutes of sudden-death overtime (when teams do not change sides from period 3). The average of the paired differences reported in column (7) of Table 1 is discernibly greater than zero ($p = .046$). In other words, Norwich University scored significantly *more* even-strength goals at home games in the minute after penalties than it did at even strength before penalties during periods 1 and 3. A similar *t*-test was not significant for Norwich the year before ($p = .23$). And, the paired *t*-test results for Middlebury College in 2004-05 and 2003-04 revealed that the home team scored, on average, significantly *fewer* even-strength goals (per minute) after than before penalties ($p < .01$).

Concluding Remarks

The unusual placement of the penalty box in hockey rinks to one side of the red line is one thing, but to take advantage of it is quite another. When a player emerges from the penalty box, he may not be able to skate free of defensemen (or the opposing player with whom he shared a matching penalty) to take, let alone safely handle, a long, fast pass. His teammates may be penned inside their own blue line zone and may not even control the puck to attempt a pass the moment he emerges from the penalty box. Some passes will be inaccurate, too far in front of or behind the player. And, in some instances, the puck will slide off the end of the blade, as so often happens when the pass is fast and a little too far ahead for easy handling.

In 2004-05, Norwich University's men's ice hockey team had the Division III Player of the Year in Kurtis McLean. One would expect that if goals were evenly distributed throughout

the game that Norwich University's most prolific scorer would tally about two-thirds of all goals scored at home during the first and third periods. In 2004-05, McLean scored 79 percent of all of his goals at home games during the first and third periods (when the penalty box is closer to the visiting team's goal).

If the location of a rink's penalty box can indeed provide better scoring situations, then visiting teams must be alert to this fact: always think outside the box, the penalty box.

**Table 1. Even-Strength Goals at Home, Periods 1 and 3,
Norwich University, 2004-05**

Home Opponent	Before Penalties			After Penalties			(7) Difference between cols. (6) and (3)
	(1) Norwich goals	(2) Time (mins.)	(3) Goals per minute	(4) Norwich goals	(5) Time (mins.)	(6) Goals per minute	
Curry	0	31.08	0	0	1.00	0	0
Tufts	5	26.70	.187	1	1.20	.833	.646
Connecticut College	3	20.98	.143	0	4.60	0	-.143
Elmira	2	31.05	.064	0	2.00	0	-.064
Manhattanville	1	26.65	.038	0	0	*	*
Southern Maine	4	20.15	.199	0	1.20	0	-.199
Salem State	2	30.73	.065	0	1.00	0	-.065
Babson	1	37.07	.027	0	1.00	0	-.027
U.Mass. – Boston	3	27.57	.109	1	0.23	4.286	4.177
Colby	3	37.08	.081	1	0.47	2.143	2.062
Bowdoin	2	25.50	.078	1	0.47	2.143	2.065
Williams	1	24.43	.041	0	2.00	0	-.041
Middlebury	2	25.32	.079	0	2.13	0	-.079
Castleton	9	32.90	.274	1	1.67	0.600	.326
New England College	1	45.30	.022	0	1.60	0	-.022