

# The Effect of Jump Layout on TES and PCS in Senior Mens Free Skates at ISU Competitions

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## 1 Overview

This short article looks at the effect of jump layouts (number of jump elements in the second half) on average scores. I display average technical scores (TES) and program component scores (PCS). Here, only Senior Men's results from ISU competitions between 2008 and 2012 are considered. The data shows an increase over time in the point return for backloading a program. The relationship is even stronger for PCS than it is for TES.

## 2 Data Analysis

### 2.1 TES and PCS Results

Figure 1 shows the trends over time in average TES for different jump layouts. In 2012 a program with five jumping passes in the second half of the program scored, on average, 12.97 points more in TES than a program where there were only two jumping passes in the second half.

Similarly, looking at Figure 2, we see that the point separation for PCS widens beginning in 2011 and 2012. By 2012 a program with five jumping passes in the second half scores on average 17.92 points more on PCS than a program with two jumping passes in the second half.

### 2.2 Backloading has Increased

Figure 3 demonstrates that skaters have been taking advantage of this perceived scoring benefit; between 2008 and 2012 the average number of second half jumping passes in a senior man's free skate has increased from 3.11 to 4.01.

## 3 Conclusion

Over time the reward in both TES and PCS for backloading a program has increased. Skaters have increased the number of jumping passes in the second

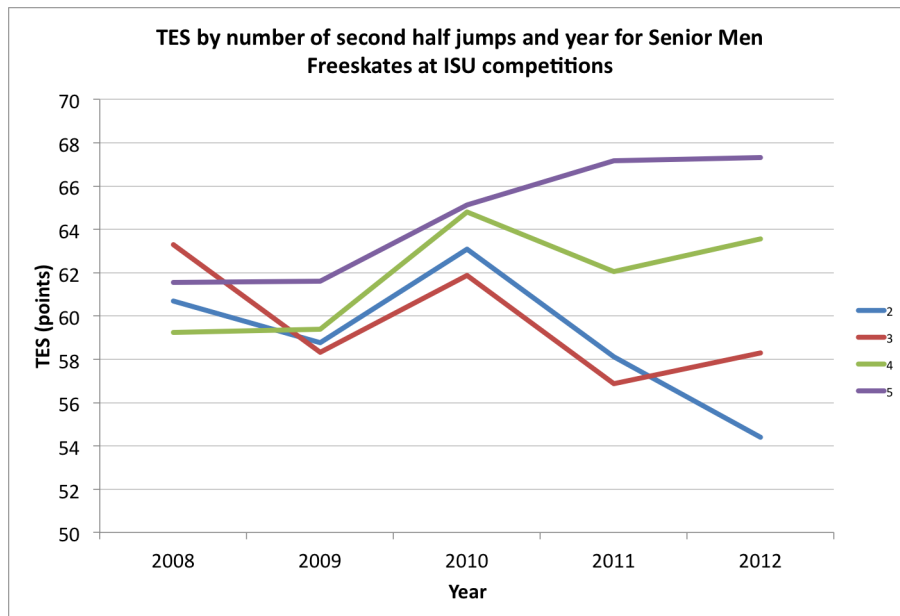


Figure 1: Technical element scores for different jump layouts over time.

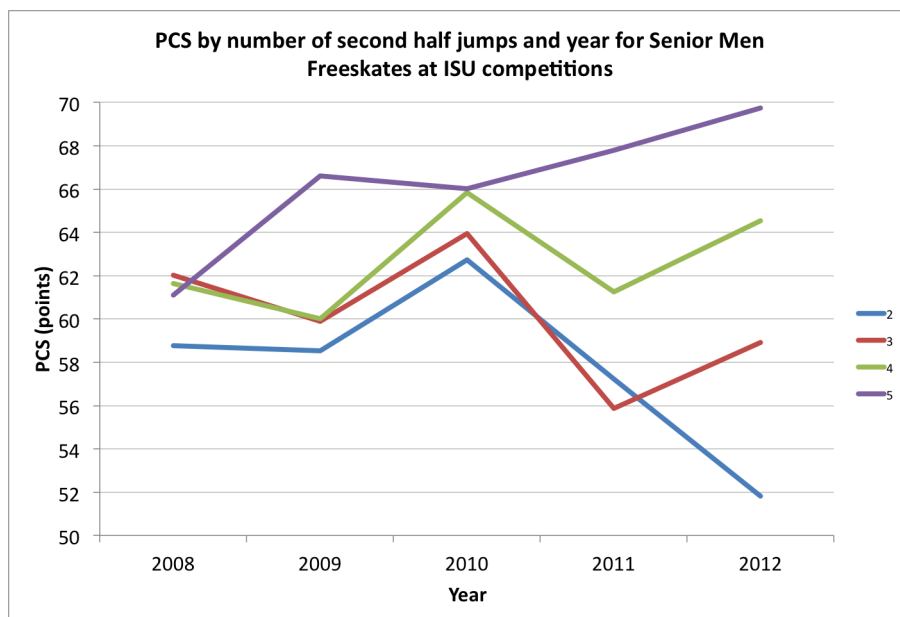


Figure 2: Program component scores for different jump layouts over time.

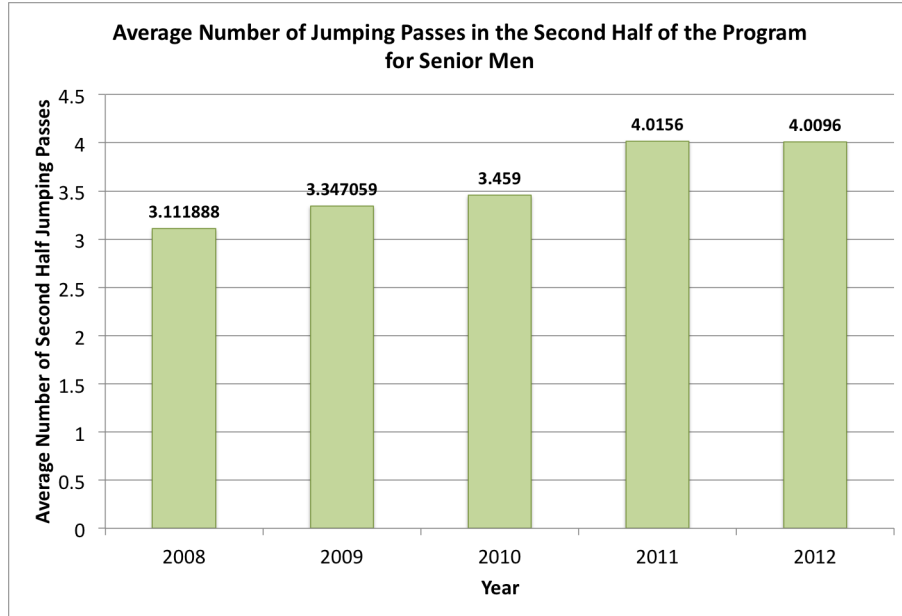


Figure 3: Average number of second half jumping passes as a function of year.

half of their programs during the same time period.

## A Appendix: Data Tables

Table 1: 2012 Data

# jumps in second half	Ave TES	Ave PCS	# Observations	Ave Ded
2	54.40	51.82	6	0.33
3	58.3	58.9	51	0.61
4	63.57	64.54	80	0.91
5	67.33	69.74	67	0.61

Table 2: 2011 Data

# jumps in second half	Ave TES	Ave PCS	# Observations	Ave Ded
2	58.11	57.22	12	0.92
3	56.86	55.87	36	0.78
4	62.05	61.24	82	0.53
5	67.18	67.78	61	0.49

Table 3: 2010 Data

# jumps in second half	Ave TES	Ave PCS	# Observations	Ave Ded
2	63.09	62.73	28	0.39
3	61.88	63.94	61	0.75
4	64.80	65.84	71	0.65
5	65.12	66.02	23	0.43

Table 4: 2009 Data

# jumps in second half	Ave TES	Ave PCS	# Observations	Ave Ded
2	58.77	58.54	23	0.82
3	58.33	59.89	61	0.57
4	59.38	60.01	69	0.47
5	61.62	66.61	12	0.83

Table 5: 2008 Data

# jumps in second half	Ave TES	Ave PCS	# Observations	Ave Ded
2	60.70	58.76	30	0.6
3	63.30	62.03	56	0.52
4	59.23	61.64	40	0.65
5	61.55	61.09	10	0.3