RELATIONSHIP BETWEEN MATURITY OFFSET, GOLF, AND PHYSICAL PERFORMANCE IN YOUTH GOLFERS

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PURPOSE

There is ample research investigating the influence of biological maturation on physical performance. However, there is little research exploring this relationship in youth golfers and more specifically, in relation to swing performance and scoring average. Therefore, the purpose of this study was to investigate the relationship between maturity offset, golf performance, and physical performance in youth golfers.

METHODS

102 male (age 16.0 ± 1.7 years) and 51 female (age 16.1 ± 1.6 years) performed three countermovement jumps (CMJ) on dual-force plates, one maximal isometric mid-thigh pull (IMTP), and ten swings with a driver measured by Trackman over the course of week as part of a testing battery upon intake to an academy. Scoring average was taken from all tournaments within the past year of testing. Standing and seated height, age, and weight were used to predict maturity offset using the Mirwald equation. Pearson correlations between maturity offset, scoring average, and club head speed (CHS) and force-time characteristics were calculated used Microsoft Excel.

RESULTS

The descriptive statistics for tournament age groups and Pearson correlations are shown below.

	Boys 11-14	Boys 15-18	Girls 12-14	Girls 15-18
n	19	83	7	44
Age	13.2 ± 0.9	16.6 ± 1.1	13.0 ± 1.0	16.5 ± 1.0
Maturity Offset	-0.1 ± 1.5	2.7 ± 0.9	1.6 ± 0.7	3.7 ± 0.7
Scoring Average	87.2 ± 9.6	82.6 ± 7.7	89.7 ± 8.0	84.5 ± 7.7
Club Head Speed (mph)	91 ± 12	105 ± 7	82 ± 5	87 ± 6
Ball Speed (mph)	130 ± 18	150 ± 20	115 ± 11	125 ± 10
IMTP Peak Force$_{ABS}$ (N)	1690.5 ± 465.5	2198.7 ± 310.9	1413.2 ± 279.2	1705.7 ± 272.9
IMTP Peak Force$_{REL}$ (N/kg)	28.5 ± 3.9	30.7 ± 3.4	24.7 ± 1.6	26.9 ± 3.4
CMJ Peak Power$_{ABS}$ (W)	2477 ± 867	3636 ± 782	1932 ± 203	2477 ± 487
CMJ Peak Power$_{REL}$ (W/kg)	41.1 ± 6.4	50.2 ± 7.2	34.5 ± 5.7	38.8 ± 4.6
CMJ Jump Height (in)	9.1 ± 1.8	13.1 ± 2.5	7.2 ± 2.0	8.8 ± 1.7

Boys

	Maturity Offset	Scoring Average	Club Head Speed (mph)
Scoring Average	-0.17	-	-
Club Head Speed (mph)	0.75***	-0.47***	-
Ball Speed (mph)	0.48***	-0.42***	0.69***
IMTP Peak Force$_{ABS}$ (N)	0.78***	-0.19	0.78***
IMTP Peak Force$_{REL}$ (N/kg)	0.11	-0.28***	0.29**
CMJ Peak Power$_{ABS}$ (W)	0.75***	-0.22*	0.74***
CMJ Peak Power$_{REL}$ (W/kg)	0.48***	-0.35***	0.57***
CMJ Jump Height (in)	0.52***	-0.39***	0.56***

Girls

	Maturity Offset	Scoring Average	Club Head Speed (mph)
Stroke Average	-0.13	-	-
Club Head Speed (mph)	0.32***	-0.29*	-
Ball Speed (mph)	0.38***	-0.42**	0.95***
IMTP Peak Force$_{ABS}$ (N)	0.55***	0.06	0.52***
IMTP Peak Force$_{REL}$ (N/kg)	0.17	-0.06	0.04
CMJ Peak Power$_{ABS}$ (W)	0.59***	0.02	0.59***
CMJ Peak Power$_{REL}$ (W/kg)	0.30***	-0.12	0.19
CMJ Jump Height (in)	0.29***	-0.24	0.37***

CONCLUSIONS

In general, even the younger group of boys outperformed the older group of girls within this cohort in physical metrics but not scoring average. Maturity offset is more related to CHS in boys than girls, potentially due to the presence of a neuromuscular spurt in boys that is largely absent as girls mature. The small-moderate relationship between stroke average, CHS, and ball speed highlight the skill-based nature of golf. Absolute strength and power had the largest relationships with CHS in boys and girls, suggesting body size plays a greater role than relative strength in generating swing speed.

PRACTICAL APPLICATIONS

Coaches working with youth golfers should understand the impact that maturation has on swing performance and account for this when scouting or developing talent. Additionally, practitioners should prioritize absolute strength and power while maintaining a body composition that allows for proper swing mechanics and walking 18-54 holes over a weekend.

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