

Risk Factors for Illicit Anabolic-Androgenic Steroid Use in Male Weightlifters: A Cross-Sectional Cohort Study

Supplemental Information

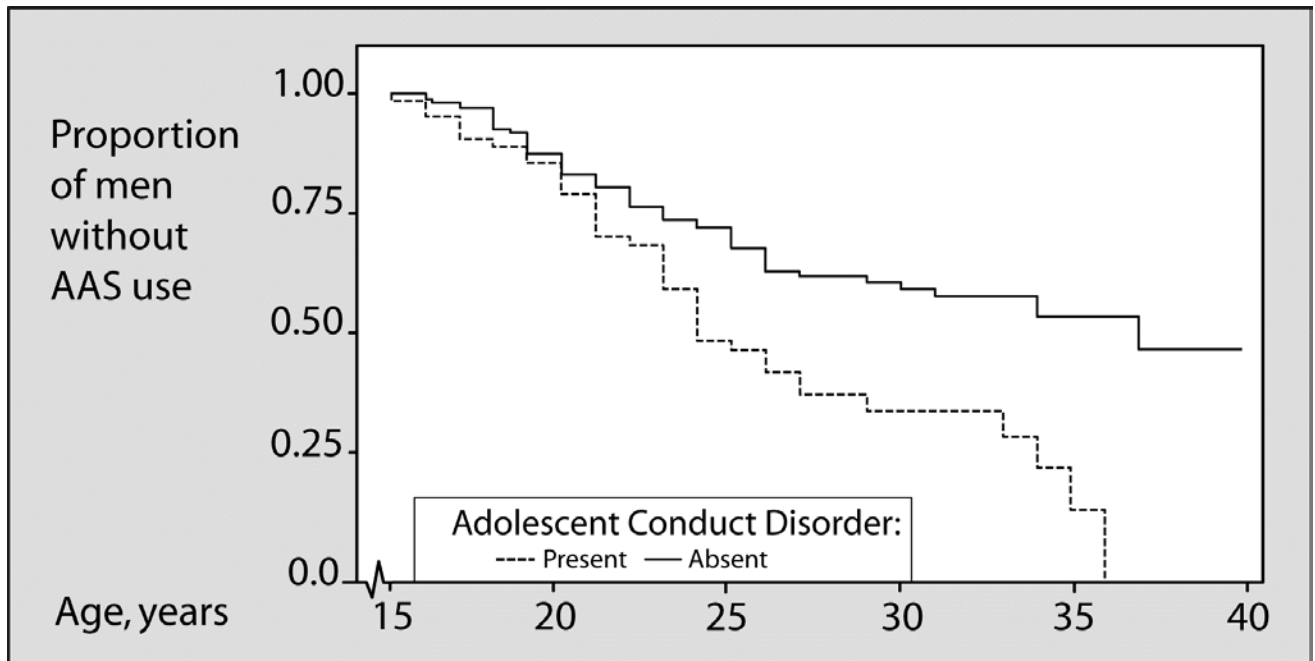


Figure S1. Kaplan-Meier curves for time to onset of anabolic-androgenic steroid (AAS) use in men reporting a history of childhood or adolescent conduct disorder versus men reporting no history of conduct disorder.

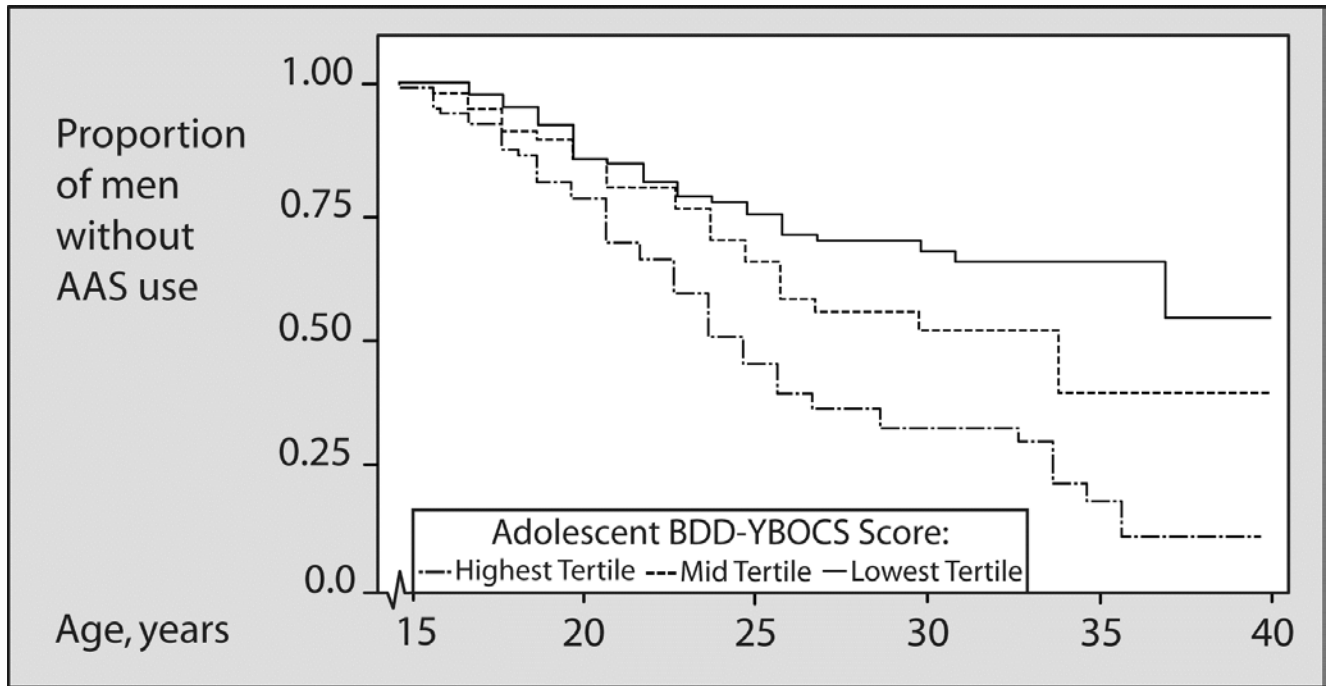


Figure S2. Kaplan-Meier curves for time to onset of anabolic-androgenic steroid (AAS) use in men in each of three tertiles of score on the retrospective “muscle dysmorphia” version of the Body Dysmorphic Disorder Modification of the Yale-Brown Obsessive Compulsive Scale (BDD-YBOCS).

Table S1. Childhood and Family Attributes of Study Participants

Attribute	N ^e	AAS Users		Hazard Ratio for AAS Use ^f			P For Trend ^g
		N	%	Estimate	95% CI	P Value	
Single parent^a							
No	153	66	43	1.0			
Yes	74	31	42	0.91	0.59 - 1.4	0.66	
Family history of substance abuse^b							
No	154	58	38	1.0			
Yes	63	34	54	1.4	0.92 - 2.2	0.11	
Childhood sexual abuse^c							
No	206	89	43	1.0			
Yes	22	10	45	0.90	0.46 - 1.8	0.77	
Childhood ADHD^d							
No	193	79	41	1.0			
Yes	40	23	58	1.5	0.94 - 2.4	0.092	
Conduct disorder^d							
No	168	61	36	1.0			
Yes	65	41	63	2.2	1.5 - 3.4	< 0.001	
Childhood and Family Questionnaire:							
Relationship with father							
"Excellent"	59	17	29	1.0			
"Good"	78	30	38	1.5	0.78 - 2.7	0.24	
"Fair," "Poor," or "Terrible"	81	46	57	2.4	1.4 - 4.3	0.003	0.001
Relationship with mother							
"Excellent"	114	51	45	1.0			
"Good"	68	27	40	0.83	0.52 - 1.3	0.45	
"Fair," "Poor," or "Terrible"	39	19	49	1.2	0.67 - 2.0	0.60	0.68
Parental Bonding Instrument:							
Father Care							
High (score 25 - 36)	82	24	29	1.0			
Medium (score 18 - 24)	70	32	46	1.4	0.83 - 2.5	0.20	
Low (score 0 - 17)	66	37	56	1.9	1.1 - 3.2	0.025	0.023
Father Overprotectiveness							
Low (score 0 - 9)	77	29	38	1.0			
Medium (score 10 - 15)	70	25	36	0.86	0.50 - 1.5	0.60	
High (score 16 - 33)	71	39	55	1.6	0.99 - 2.7	0.055	0.091
Mother Care							
High (score 32 - 36)	78	29	37	1.0			
Medium (score 24 - 31)	75	33	44	1.1	0.64 - 1.8	0.80	
Low (score 0 - 23)	68	35	51	1.4	0.85 - 2.3	0.19	0.21

Mother Overprotectiveness

Low (score 0 - 11)	72	26	36	1			
Medium (score 12 - 18)	79	38	48	1.4	0.85 - 2.4	0.18	
High (score 19 - 39)	70	33	47	1.4	0.83 - 2.5	0.20	0.18

25-Item Wender Utah Rating Scale for ADHD

Low (score 0 - 20)	77	28	36	1			
Medium (score 21 - 39)	74	35	47	1.4	0.82 - 2.3	0.24	
High (score 40 - 86)	78	36	46	1.2	0.71 - 2.0	0.51	0.50

AAS, anabolic-androgenic steroids; ADHD, attention-deficit/hyperactivity disorder; CI, confidence interval.

^a Lived with only one parent for at least some time prior to age 13 as a result of parental separation, divorce, or death.

^b At least one first-degree relative judged to meet DSM-IV criteria for alcohol or illicit drug abuse or dependence, based on participant's report.

^c Based on responses to the Childhood and Family Questionnaire (see text).

^d Based on the Structured Clinical Interview for DSM-IV-Child Edition (see text).

^e Total *N* is less than 233 for some items due to missing data (e.g., participants who lacked information about their biological parents).

^f By proportional hazards model, with adjustment for race/ethnicity, study site, and birth cohort (see text).

^g Calculated for the linear trend of the hazard ratios using the medians of the tertiles as a continuous variable.

Table S2. Adolescent Attributes of Study Participants

Attribute	N ^a	AAS Users		Hazard Ratio for AAS Use ^b			P For Trend ^c
		N	(%)	Estimate	95% CI	P Value	
Impulsive Sensation Seeking Scale							
Low (score 0 - 9)	72	27	38	1.0			
Medium (score 10 - 14)	72	30	42	1.0	0.62 - 1.8	0.86	
High (score 15 - 19)	85	42	49	1.4	0.85 - 2.4	0.18	0.18
Adolescent Risk-Taking Questionnaire:							
Thrill-Seeking Behaviors							
Low (score 0 - 1.00)	80	37	46	1.0			
Medium (score 1.14 - 1.43)	69	30	43	0.92	0.56 - 1.5	0.76	
High (score 1.57 - 3.14)	80	32	40	0.74	0.45 - 1.2	0.23	0.24
Rebellious Behaviors							
Low (score 0 - 1.0)	70	25	36	1.0			
Medium (score 1.2 - 2.2)	81	31	38	0.81	0.47 - 1.4	0.45	
High (score 2.4 - 4.0)	78	43	55	1.3	0.77 - 2.3	0.32	0.03
Reckless Behaviors							
Low (score 0 - 0.6)	79	25	32	1.0			
Medium (score 0.8 - 1.4)	74	30	41	1.3	0.74 - 2.2	0.38	
High (score 1.6 - 3.2)	76	44	58	1.8	1.1 - 3.1	0.025	0.078
Antisocial Behaviors							
Low (score 0 - 0.8)	70	26	37	1.0			
Medium (score 1.0 - 1.4)	93	37	40	1.1	0.67 - 1.9	0.65	
High (score 1.6 - 3.4)	66	36	55	1.5	0.89 - 2.6	0.12	0.094
Eating Disorders Inventory (modified for boys):							
Drive for Thinness							
Low (score 0)	114	43	38	1.0			
Medium (score 1 - 2)	50	19	38	1.3	0.74 - 2.2	0.38	
High (score 3 - 20)	65	37	57	2.0	1.3 - 3.1	0.003	0.002
Bulimia							
Low (score 0)	155	62	40	1.0			
Medium (score 1 - 2)	39	15	39	1.1	0.60 - 2.0	0.76	
High (score 3 - 20)	35	22	63	1.9	1.2 - 3.1	0.011	0.009
Interceptive Awareness							
Low (score 0)	81	28	35	1.0			
Medium (score 1 - 2)	65	28	43	1.4	0.80 - 2.3	0.26	
High (score 3 - 19)	83	43	52	2.0	1.2 - 3.5	0.009	0.016
Body Dissatisfaction							
Low (score 0 - 2)	72	22	31	1.0			
Medium (score 3 - 8)	85	35	41	1.3	0.76 - 2.3	0.33	
High (score 9 - 24)	72	42	58	1.9	1.1 - 3.3	0.014	0.003

Ineffectiveness								
Low (score 0)	70	18	26	1.0				
Medium (score 1 - 5)	89	37	42	1.7	0.93 - 3.1	0.082		
High (score 6 - 26)	70	44	63	3.0	1.7 - 5.4	< 0.001	< 0.001	
Maturity Fears								
Low (score 0 - 1)	67	29	43	1.0				
Medium (score 2 - 4)	89	36	40	0.99	0.60 - 1.6	0.98		
High (score 4 - 18)	73	34	47	1.2	0.71 - 1.9	0.54	0.44	
Perfectionism								
Low (score 0 - 4)	84	46	55	1.0				
Medium (score 5 - 8)	79	29	37	0.61	0.38 - 0.99	0.046		
High (score 9 - 18)	66	24	36	0.72	0.43 - 1.2	0.21	0.2	
Interpersonal Distrust								
Low (score 0 - 2)	78	25	32	1.0				
Medium (score 3 - 5)	71	33	46	1.6	0.92 - 2.7	0.096		
High (score 6 - 20)	80	41	51	1.6	0.96 - 2.7	0.068	0.1	
Total score								
Low (score 0 - 20)	76	25	33	1.0				
Medium (score 21 - 33)	78	32	41	1.4	0.83-2.5	0.19		
High (score 34 - 109)	75	42	56	2.0	1.2 - 3.3	0.01	0.004	
Adolescent Experience Questionnaire:								
Physical Dominance								
High (score 23 - 30)	72	28	39	1.0				
Medium (score 18 - 22.5)	78	32	41	1.0	0.60 - 1.7	0.93		
Low (score 0 - 17.5)	79	39	49	1.2	0.71 - 1.9	0.52	0.47	
Physical Attractiveness								
High (score 21.5 - 30)	81	26	32	1.0				
Medium (score 16.5 - 21)	74	34	46	1.4	0.81 - 2.4	0.23		
Low (score 0 - 16)	74	39	53	2.0	1.2 - 3.4	0.008	0.015	
Athleticism								
High (score 27.5 - 30)	73	24	33	1.0				
Medium (score 21.5 - 27)	78	32	41	1.4	0.79 - 2.3	0.27		
Low (score 0 - 21)	78	43	55	2.2	1.3 - 3.6	0.004	0.003	
Social Status								
High (score 24 - 30)	72	26	36	1.0				
Medium (score 17.5 - 23.5)	79	34	43	1.2	0.69 - 2.0	0.57		
Low (score 0 - 17)	78	39	50	1.4	0.83 - 2.3	0.22	0.16	
Sensitivity to Peer Pressure								
Low (score 0 - 13)	75	33	44	1.0				
Medium (score 13.5 - 18)	77	33	43	0.80	0.48 - 1.3	0.40		
High (score 18.5 - 29)	77	33	43	0.90	0.54 - 1.5	0.70	0.62	

Peer Drug Use

Low (score 0 - 10)	79	32	41	1.0			
Medium (score 10.5 - 17.5)	75	29	39	0.83	0.50 - 1.4	0.49	
High (score 18 - 30)	75	38	51	1.3	0.77 - 2.1	0.35	0.35

Drug Availability

Low (score 0 - 14.5)	76	30	39	1.0			
Medium (score 15 - 22)	77	37	48	1.1	0.66 - 1.8	0.77	
High (score 22.5 - 30)	76	32	42	0.99	0.58 - 1.7	0.96	0.87

BDD - YBOCS

Low (score 0 - 1)	90	27	30	1.0			
Medium (score 2 - 4)	69	27	39	1.5	0.84 - 2.6	0.17	
High (score 5 - 34)	74	48	65	3.3	2.0 - 5.3	< 0.001	< 0.001

AAS, anabolic-androgenic steroids; BDD-YBOCS, retrospective "muscle dysmorphia" version of the Body Dysmorphic Disorder Modification of the Yale Brown Obsessive Compulsive Scale; CI, confidence interval.

^a Total *N* is less than 233 for some items due to missing data.

^b By proportional hazards model, with adjustment for race/ethnicity, study site, and birth cohort (see text).

^c Calculated for the linear trend of the hazard ratios using the medians of the tertiles as a continuous variable.