
THE CrossFit JOURNAL

CrossFit Athletes vs. the Combine 360

Over 1,000 elite athletes have been tested at IMG Academies, including a group of top CrossFitters. Dave Castro describes the test protocols and shares the results.

By Dave Castro

September 2010



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In the spring of 2010, we sent a group of elite CrossFit athletes to the IMG Academies in Bradenton, Fla. The purpose of the trip was to put them through Under Armour's Combine 360 training protocol, "the global measurement standard for improved performance." We were excited about putting our best CrossFit competitors up against a testing protocol of which we had essentially no knowledge.



Miranda Oldroyd tests her standing broad jump.

We selected our group from the current crop of outstanding CrossFit competitors.

They fell into a few different categories: winners of the CrossFit Games, high-placing 2009 Games athletes and 2010 sectionals winners or runners-up. At the time of this testing, we had not started the regionals.

The female athletes included Miranda Oldroyd, Lindsey Smith, Karianne Dickson, Emily Beers, Heather Bergeron, '08 champ Caity Henniger, '09 champ Tanya Wagner, and Kristan Clever, who would go on to win the 2010 Games in July.

The men were Patrick Burke, Spencer Hendel, David Millar, Pat Barber, Rob Orlando, Chris Spealler, Tommy Hackenbruck, Jared Davis, and '09 champ Jason Khalipa.

Including our group, over 1,000 athletes have been put through the testing. This list comprises pro football players and other pro athletes from baseball, lacrosse, tennis and golf, as well as one of Canada's top 100-meter sprinters and a host of other elite track stars. A host of elite amateur athletes have also been tested.

The purpose of this piece is not to judge, evaluate or criticize the testing protocol or the Combine 360. The purpose is to report how our CrossFit group measured up against the athletes who have gone through the 360 protocol.



Chris Spealler goes vertical in a test of power.



Jason Khalipa's upper-body strength put him at the top of the seated med-ball toss.

The Tests

There were three major components to the test.

1. Athleticism
2. Movement
3. Character

Each component had 120 points available for a total possible score of 360.

Athleticism—120 Points

The 120 points available for Athleticism were available in nine scored components. They included the following tests:

- Broad jump
- Seated med-ball throw
- Vertical jump
- 5-10-5 drill
- 10-yard sprint
- 20-yard sprint
- Grip test
- 300-yard shuttle
- Sit and reach

The max points available for each category was 13.3.

Hackenbruck had the biggest vertical (41 inches), which was actually a 4-inch PR from when he last did a combine during his football days as a linebacker at the University of Utah. Little Pat Barber had the second highest jump with 36.5. The highest-scoring females were Beers and Henniger, the latter of whom played basketball at Ohio State. Both had 25-inch jumps. All males, with the exception of me, were over 30 inches. I jumped 27 inches. (Since I am not a CrossFit competitor, my scores were not factored into the group's scores for overall rankings.)

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For the seated med-ball test, Khalipa threw the ball 23 feet 4 inches. The next furthest throw was Jimi Letchford (21 feet 1 inch), who was there as an HQ rep. 2008 Games champ Henniger had the best toss for the women with 16 feet 9 inches, which bested both me and Spealler by a few inches.

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On the grip test, which was conducted on a hand dynamometer, CrossFit strongman Orlando dominated the test with a 186-lb. pull. Hackenbruck and Khalipa were tied for second with 180. Wagner pulled a 121 for the top female score, beating Barber in the process.

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Pat Barber scored well in both the standing- and broad-jump tests but was unable to beat Tommy Hackenbruck, who was tops in both.

On the standing broad jump, Hackenbruck again had the biggest leap (114 inches), while Hendel leapt 113 inches. Davis and Spealler rounded out the top four with jumps of 112 and 111 inches. The best jump on the women's side was Beers' 94 inches. Smith was second with 92 inches.

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For the 300-yard shuttle, Davis and Hendel had a score of 53 seconds. The fastest time on record was by a top-tier Division I football player who scored 50 seconds. Beers had the fastest women's time (59 seconds).

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The 10- and 20-yard sprint times were gathered on our attempts at a 40-yard dash. The 40 was not included in this section of the testing, but the scores for the full distance were included later on in the sport-specific section of testing. Orlando was the fastest male over 10 yards (1.59 seconds), and Smith was the fastest female (1.65). Burke was fastest over 20 yards (2.65 seconds) on the male side, and Clever was tops for the women (2.81).

For the 5-10-5 event, Davis was the fastest within our crew (4.34 seconds). The top female for our group was Henniger (4.89 seconds). A few guys were lucky and procured some cleats from the IMG staff, and we conducted the test on an artificial grass field. Those who did not have cleats were at a disadvantage.

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The median score for all 1,000 athletes who have competed is 57 out of the possible 120 points available for this section. The median score for our CF group was 73. Davis had an Athleticism score of 90, and Hackenbruck had the highest score for our group, with 96. For the women, Beers' 73 was the highest. The highest-scoring athlete tested by IMG has a score of 104 and is a wide receiver for a top-tier Division I football team.

Movement—120 Points

Movement was broken up into three parts:

- Sport Specific
- Integrative Movement
- Visual Ability

The Sport Specific section was worth 40 points and included the following tests, each worth 13.3 points:

- Three-cone drill
- 40-yard dash
- An interval conditioning test

The three-cone drill is commonly seen in football combines. Our best score here was put in by Davis (7.02 seconds). Hackenbruck scored 7.19, and Hendel scored 7.21. Clever scored 8.13, besting men including Burke, Orlando and Millar.



Lindsey Smith was the fastest female over 10 yards and 40 yards

Four of our eight men went below 5 seconds on the 40, with Davis having the fastest time (4.72). Smith had the fastest women's 40 (5.12), which was actually faster than Millar and tied Khalipa.
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Spealler's conditioning helped him to a great score in the interval test.

The interval-conditioning test consisted of 10-second shuttles over escalating distances with 10 seconds of rest at the end of each run. This was similar to a multi-stage fitness test, except in this case distance was controlled rather than time. Davis, Hackenbruck and Spealler all completed 28 intervals. The next highest was 26.
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For this Sport Specific category, we had a median score of 20.5 out of 40 possible points. The median for the 1,000 tested was 23, and the median for an entire top-tier Division I football team was 21. Our high scorer was Davis (35), and Hackenbruck had a 31. The highest female score was 20, by Kristan Clever. This is only the part of the test where components are different for different athletes. For example, football players bench instead of doing the interval conditioning test.

In this area, I would have liked to have seen CrossFit athletes doing CrossFit events. It could have looked like this: CrossFit Total for a third of the points, a couplet or triplet like Fran or Helen for the second third, and a series of skill-validation drills for the final third of the points available. The skill-validation section could have been a drill that verified competency in some of the higher-skill CF movements, like the handstand push-up, muscle-up, pistol, rope climb and squat snatch. You would just have to show ability to do each.



CrossFit's female reps at the IMG Academies.

The Integrative Movement section was worth 40 points and comprised three tests:

- Pressing squat
- Balance
- Posture

The pressing squat most resembled a pressing snatch balance in movement pattern. You started with the dowel on your back and pressed down to an overhead snatch position. But it was definitely not a pressing snatch balance. Your feet had to be set at shoulder width and toes had to be pointed perfectly straight forward. The point of this test from the test creators' point of view was to test a total-body movement pattern and mobility. Hackenbruck scored higher than Spealler on this, not because he has a better squat, or a better overhead squat, but because he was able to "test" it better and do what the grader was looking for. [.mov](#) | [.wmv](#)

For the balance portion you had to stand on one leg with your arms out. You then leaned forward, still balancing on one leg, into a position that had your upper body horizontal at that hip with your arms out and your elevated leg extended behind you. From here you rotated and touched your leg with your opposite arm while maintaining balance throughout and then returning to the balanced position. Two scored tries were allowed for each leg. [.mov](#) | [.wmv](#)

On the posture drill, you started in a push-up position (arms extended) and then lifted one arm off the ground while lifting the opposite leg off the ground. Two scored attempts were allowed on each side. Each of these movement patterns was improved with each subsequent attempt. [.mov](#) | [.wmv](#)

Our median score was 20, and the median of all athletes who have been tested is 13. Clever had our highest score, with a 34. Our highest male score was Orlando, with a 25. Spealler had 24.

The Visual section was worth 40 points over three drills:

- Near/far accommodation
- Saccadic movement—horizontal
- Saccadic movement—vertical



Tommy Hacks does his best superman impression on his way to a 114-inch broad jump.



Heather Bergeron followed up her IMG performance with a top 10 finish at the CrossFit Games.

The visual component comprised some tests that evaluated our near-far visual skills, as well as horizontal and vertical tests that evaluated our rapid eye movements. This section included drills that had athletes reading numbers from one display that was close and one that was far. Each tried to read as many letters as he or she could in a fixed time while alternating from near sheet to far. Similar drills were done with side-to-side tests and vertical tests. We did some additional testing that was not part of this scoring, including a rapid-eye hand test where athletes tried to touch dots that appeared on a wall as fast as quickly as they could.

Davis had the highest score here with a 29, and I was second with a 28. We were told baseball players traditionally do well on this test, and Davis comes from a baseball background. My years of shooting in my past job probably helped me on this test. Henniger and Dickson each scored 26.

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The median for all athletes is 20. Our median score was 21.5. The top-tier Division I football team scored 19. A basketball player actually had a perfect score of 40 on this.

Our total for the entire movement section was a median of 62 out of a possible 120 points. The median for all athletes tested is 56. The top-tier Division I football team registered 55.5.

Character—120 points

Character was broken up into three parts, each worth 40 points:

- Mentality
- Nutrition
- Communication

Interestingly enough, all three of these were self-scored. We did not know or realize this at the time of the test. I found that out in writing this piece for the *CrossFit Journal* and in my research. The scores we reported for ourselves on an info sheet were the scores that we were given. We thought that sheet was for basic knowledge of the athletes and not for the actual testing. Some of the stuff that we did think was on the scoring, like the acting scenarios, was actually not scored on this 360 sheet.

Self-reporting on tests like this is not outside the norm. The NFL also does some self-reported tests. I asked Dr. Angus Mugford, head of mental conditioning, about this, and he responded with the following: “The ‘character’ portion was self-reported—specifically—nutrition, mentality and communication. There is a ‘zen’ like quality that you essentially grade your own character! There is a capacity for people to cheat the system, but they are only cheating themselves. Mentality and communication scores on a 5-point scale

from ‘never’ to ‘always’ experience particular thoughts or situations. For people who simply try to get the highest score, we put in a ‘lie scale’ that aims to measure the impression that they are trying to create—by giving the perfect answer. This scale was called ‘impression management’ and ranges from ‘balanced’ (where we want people to be objective and balanced), to ‘extreme’ (exposing the potential to either not be honest with where you are at, or simply not aware of how you are doing at those things).

Gender	Last Name	First Name	C360	Foundation	Sport	Integrative	Vision	Mentality	Nutrition	Commn
M	Davis	Jared	267	90	35	11	29	34	40	28
M	Hackenbruck	Tommy	266	96	31	22	25	32	40	20
M	Spealler	Chris	249	84	25	24	21	31	40	24
M	Orlando	Rob	247	85	21	25	24	31	30	31
F	Clever	Kristan	244	68	20	34	21	33	40	28
M	Barber	Patrick	242	85	25	20	20	33	30	29
M	Letchford	James	241	85	22	16	18	32	40	28
M	Millar	David	241	84	21	20	17	31	40	28
F	Bergeron	Heather	238	66	17	25	25	32	40	33
M	Hendel	Spencer	238	81	26	16	21	34	35	25
F	Beers	Emily	236	73	17	25	24	31	40	26
F	Dickson	Karianne	232	61	15	30	26	32	35	33
F	Smith	Lindsey	228	72	16	20	22	31	40	27
M	Burke	Patrick	225	77	13	20	12	36	40	27
F	Wagner	Tanya	225	65	19	20	22	31	40	28
F	Henniger	Caity	222	64	18	20	26	31	35	28
M	Khalipa	Jason	222	73	23	20	17	34	30	25
F	Oldroyd	Miranda	198	68	15	14	20	28	25	28
	TOTAL	MAX	267	96	35	34	29	36	40	33
		MIN	198	61	13	11	12	28	25	20
		MEDIAN	238	75	20.5	20	21.5	32	40	28
		OVERALL SAMPLE OF 1000 ATHLETES (IMG Academy JR Athletes, Division 1 Football Program, Elite & Professionals)								
TOTAL	MAX	267	104	36	35	40	36	40	36	
	MIN	122	10	1	1	3	24	5	17	
	MEDIAN	204	57	23	13	20	31	30	27	
TOP-TIER DIVISION 1 FOOTBALL PROGRAM										
TOTAL	MAX	267	104	31	26	33	36	40	34	
	MIN	156	15	4	4	8	25	15	20	
	MEDIAN	223	80.5	21	15.5	19	31	30	28	

Figure 1: The scores of CrossFit's athletes, as well as a comparison of the group's performance vs. all athletes and vs. athletes from a top-tier Division 1 football program.

M/F	Age	Last Name	First Name	Sport	C360	Foundation	Sport Specific	Integrative	Vision	Mentality	Nutrition	Communication
M	-	Division I Player		FOOTBALL	267	94	25	26	20	36	35	31
M	26	Davis	Jared	GENERAL	267	90	35	11	29	34	40	28
M	28	Hackenbruck	Tommy	GENERAL	266	96	31	22	25	32	40	20
M	19	IMG Athlete		GOLF	264	82	32	18	34	31	35	32
M	-	Division I Player		FOOTBALL	256	98	23	20	32	31	25	27
M	-	IMG Athlete		BASEBALL	256	77	35	15	34	34	30	31
M	-	IMG Athlete		BASEBALL	256	76	35	8	31	33	40	33
M	18	IMG Athlete		BASKETBALL	256	78	35	20	19	33	40	31
M	-	Division I Player		FOOTBALL	252	86	24	16	23	35	35	33
M	31	Spealler	Chris	GENERAL	249	84	25	24	21	31	40	24
M	-	Division I Player		FOOTBALL	248	97	23	17	17	36	25	33
M	-	Division I Player		FOOTBALL	248	69	27	22	33	29	40	28
M	-	IMG Athlete		GOLF	248	74	25	35	16	30	40	28
M	20	IMG Athlete		TENNIS	248	61	36	34	14	35	35	33
M	35	Orlando	Rob	GENERAL	247	85	21	25	24	31	30	31
M	-	Division I Player		FOOTBALL	246	88	28	21	16	35	25	33
M	-	IMG Athlete		BASEBALL	246	84	34	17	19	30	35	27
M	16	IMG Athlete		BASEBALL	244	72	32	12	25	35	35	33
M	18	IMG Athlete		BASEBALL	244	68	32	10	36	35	30	33
M	19	IMG Athlete		BASKETBALL	244	75	29	24	28	30	30	28
F	27	Clever	Kristan	GENERAL	244	68	20	34	21	33	40	28
M	-	IMG Athlete		BASEBALL	242	65	31	17	27	36	40	26
M	-	IMG Athlete		BASEBALL	242	65	31	17	27	36	40	26
M	24	Barber	Patrick	GENERAL	242	85	25	20	20	33	30	29

Figure 2: The top 24 of the 1,000 athletes tested in the Combine 360.

"This section creates a really interesting tool to be able to have a colleague, coach or trainer hold you accountable to the things you report in here. For example, our athletes frequently see themselves one way, but behave another way in practice/competition. For our coaches and athlete to complete this process from both sides, it provides a great middle ground to discuss the perception of where any potential differences are. This can have really meaningful follow up and support about effort, confidence, attitude, teamwork, etc

"The mentality and communication items were developed by having our senior coaching staff generate their definitions of what 'mental' characteristics and areas of communication ... are most important to be successful in their sport (tennis, soccer, baseball,



Barber contemplates closing out the day with another 40-yard sprint.



basketball, golf, football). From 150 different responses, we found 7 themes that emerged from the mentality side of the equation and 4 from communication, and from this we went back to athletes to see how they defined them with examples (e.g. what does confidence look like to you ... ?). From this feedback we were able to generate questions that both athletes and coaches recognized and identified."

The mentality section asked us questions about our attitude, effort given to activities, coachability, awareness, concentration, confidence, composure and impression management. Burke had the highest score with a 36, and for the women Clever had a 33. If you know these athletes, this sounds right.

On the nutrition portion, again self-reported, we had 11 out of our 18 athletes score 40 out of 40. This section had questions on our dietary intake and how nutritionally aware we are.

The 40 points available for communication were broken into questions about the following: conversation, self-awareness, body language, humor and impression management. Dickson and Bergeron had high scores of 33, and Orlando and I had 31.

Our median for the character section was 100 out of 120. The median for the sample of 1,000 tested athletes was 88. The median for the top-tier Division I football team was 89.

The Numbers

As of this writing, the highest individual score on the Combine 360 is 267, and it is shared by a CrossFitter, Jared Davis of CrossFit SS (Jacksonville, Fla.), and a player from a Division I football team. Davis was the first-place finisher in the Florida Regional and competed at the 2010 CF Games on the CrossFit SS affiliate team. Jared's entire scoresheet can be viewed by clicking on "Appendix A" below.

Three of the top 10 overall scores are held by CrossFitters. Hackenbruck holds the second-place spot (266), one point behind Davis, and Spealler (249) has the 10 spot. Clever had the top female score with a 244, which puts her 21st in the overall scoring.

Our group had a median score of 238, while the median for all athletes is 204. The Division I football team had a median score of 223. Our high was 267 and our low was 198. See Figure 1 (Page 8) for a chart showing our results across the board, and Figure 2 (Page 9) for the overall top scores.

The CrossFit group as a whole finished in the top 10 percent of *all* athletes tested.

Appendix A: Jared Davis - C360.pdf

Special thanks to Angus Mugford, Trevor Moawad, Lynn Dorton, Jeff Dillman and his strength and condition team, and all the members of the IMG Academies. Thanks to B.J. Corey of Under Armour for helping us get this going.



About the Author

Dave Castro is CrossFit's Co-Director of Training.