

TESTS WITH “FIRVEST” CONDUCTED IN THE NETHERLANDS (August 2009)

The FIRVEST has been tested on several athletes in the Netherlands, here are some of the results of these tests.

TEST CONDITIONS:

- During the test the subjects used two identical t-shirts, one of them containing the technology and the other containing a placebo.
- Neither the athlete or the instructor knew which of the 2 shirts was the placebo or the firvest at the time of testing.
- The order of testing (placebo-firvest or firvest-placebo) was totally random.
- Tests were made inside a hall with no external weather effects.

Picture of the two T-shirts used for the tests



No visible difference between the placebo and the shirt containing the technology



TESTS REPORT by Maarten Groeneveld, physiotherapist of the Dutch National handball federation

TEST 1, HIGH JUMPING:

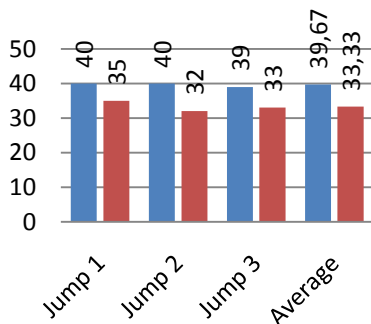
- A height meter is used, whereby the subject has a belt around the waist to which a centimeter is attached.
- Subject stands on plate and centimeter is straightened. Subject bend knees and makes an extension jump as high as possible. The person makes 2 trial jumps so (s)he knows what to do. Then (s)he puts on shirt 1 or 2, jumps 3 times with intervals of 15 seconds. Then the subject rests for 1 minute puts on the other shirt and jumps 3 times again with 15 seconds interval
- Extreme results (positive as well as negative) with large variations were taken out of the tables shown below.

Results:

Subject	Vest order	FIRVEST (Jacket 1)				PLACEBO (Jacket 2)				Difference	
		Jump 1	Jump 2	Jump 3	Average	Jump 1	Jump 2	Jump 3	Average	absolute	percentage
1	2 - 1	44	40	38	40,67	34	33	37	34,67	6,00	17,31%
2	2 - 1	40	40	39	39,67	35	32	33	33,33	6,33	19,00%
3	1 - 2	36	41	42	39,67	41	38	35	38,00	1,67	4,39%
4	2 - 1	43	47	45	44,83	36,5	38	39	37,83	7,00	18,50%
5	2 - 1	42	41	42	41,67	37	39	36	37,33	4,33	11,61%
6	2 - 1	79	79	79	79,00	75	71	67	71,00	8,00	11,27%
7	1 - 2	61	64	63	62,67	61	64	63	62,67	0,00	0,00%
8	1 - 2	45	40	41	42,00	39	36	36	37,00	5,00	13,51%
48,77					43,98					4,79	10,90%

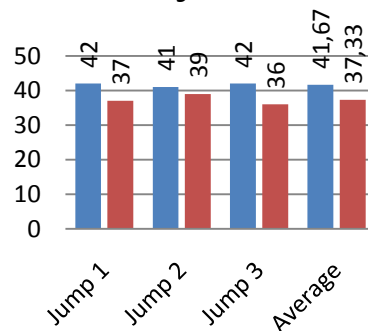
In the above graph it is visible that the gain in height is depending on the subject, **yellow** is the highest jump overall. Gain varies between 0 – 19% and the best results are obtained on the subjects that are the most consistent jumpers. On average the gain is 4,79 cm which is 10,9%.

Subject 2



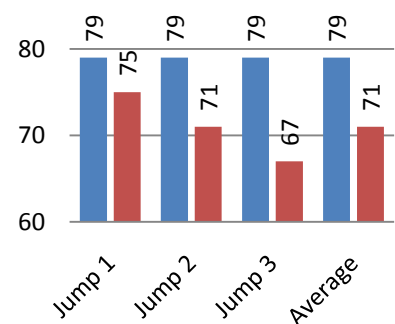
■ 2 (with FIRVEST)
■ 2 (with PLACEBO)

Subject 5



■ 5 (with FIRVEST)
■ 5 (with PLACEBO)

Subject 6



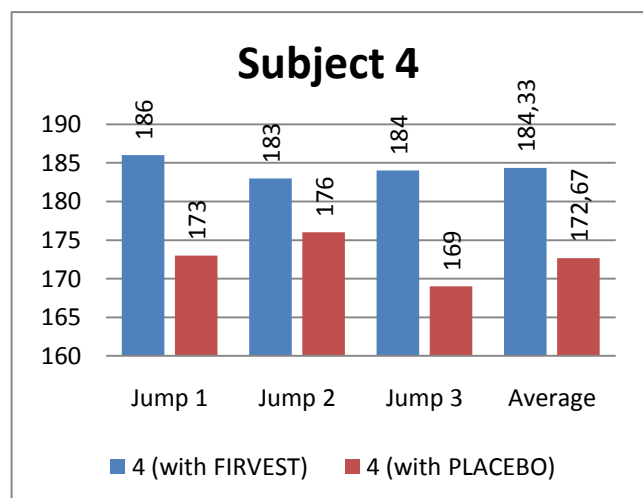
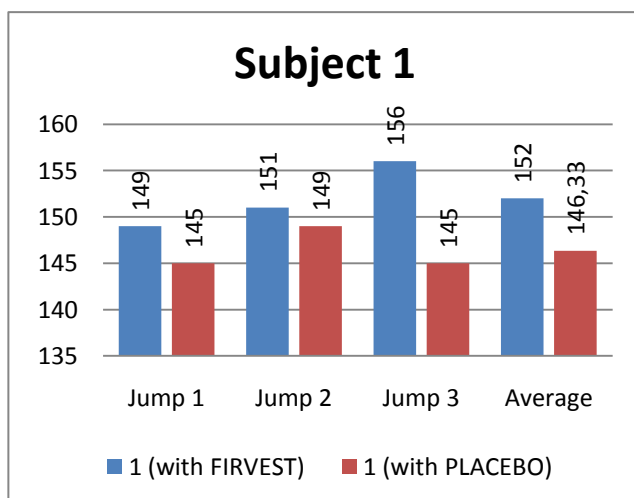
■ 6 (with FIRVEST)
■ 6 (with PLACEBO)

TEST 2, DISTANCE JUMPING:

- For the test I used a start line and a centimeter.
- Subject bend through knees and then 2 legs push (jump) as far as possible.
- Subject has 2 trial jumps, then 3 jumps with shirt 1 or 2 with 15 seconds interval, followed by 1 minute rest and then 3 jumps with the other shirt with 15 seconds interval.
- Extreme results (positive as well as negative) with large variations were taken out of the tables shown below.

subject	vest order	FIRVEST (Jacket 1)				PLACEBO (Jacket 2)				Difference	
		Jump 1	Jump 2	Jump 3	Average	Jump 1	Jump 2	Jump 3	Average	absolute	percentage
1	1 - 2	149	151	156	152,00	145	149	145	146,33	5,67	3,87%
2	1 - 2	177	180	173	176,67	177	177	170	174,67	2,00	1,15%
3	2 - 1	167	171	176	171,33	165	167	171	167,67	3,67	2,19%
4	2 - 1	186	183	184	184,33	173	176	169	172,67	11,67	6,76%
5	2 - 1	148	149	147	148,00	143	143	145	143,67	4,33	3,02%
6	2 - 1	182	181	182	181,67	181	175	181	179,00	2,67	1,49%
7	1 - 2	202	211	212	208,33	205	205	196	202,00	6,33	3,14%
8	1 - 2	228	223	228	226,33	228	227	231	228,67	-2,33	-1,02%
181,08					176,83					4,25	2,40%

In the above graph it is visible that the gain in distance is depending on the subject, **yellow** is the highest jump overall. Maximum gain is 6,76% and the best results are obtained on the subjects that are the most consistent jumpers. On average the gain is 4,25 cm which is 2,4%. Another noticeable advantage is that most jumpers landed considerably more stable wearing the shirt with the technology in it then without it.

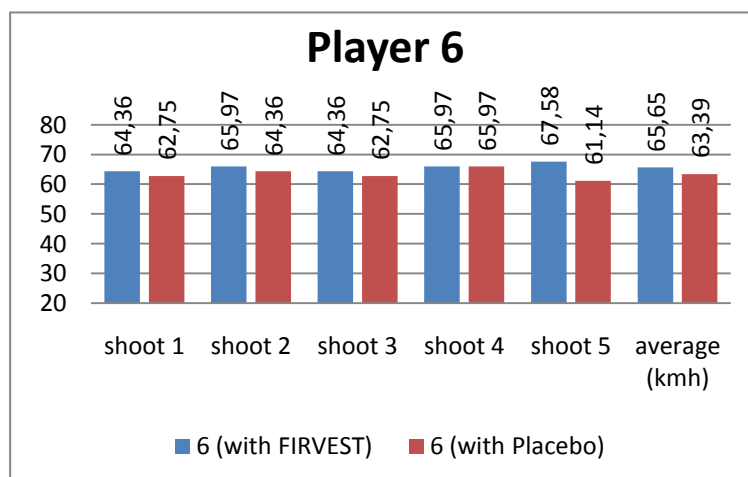
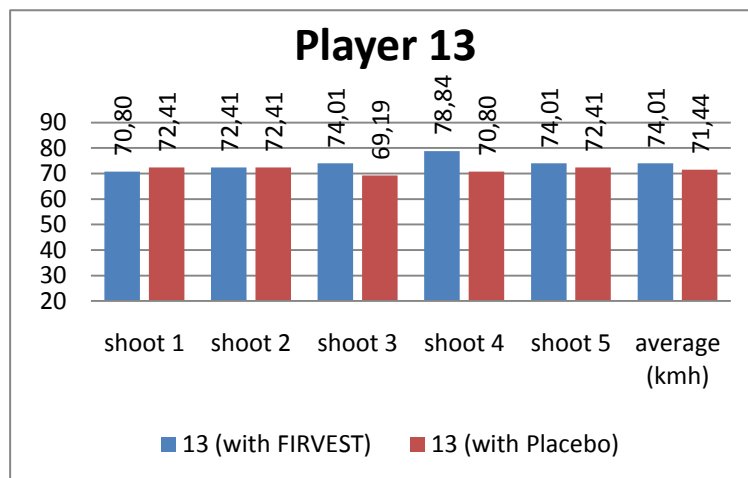


TEST 3, HANDBALL SHOOTING (SPEED):

- Player shoots the ball from a distance of 7 meter to the goal.
- De speed gun is 2 meters behind the goal line.
- Player has first some practice shots. This is followed by 5 shots with one of the shirts, with an interval of a few seconds between the shots.
- After this series of shots the player has a rest of approximately 3 minutes and then (s)he shoots another 5 balls with the other shirt.

Player	Jacket order	FIRVEST (JACKET 1)					JACKET 2 (Placebo)										
		KMH	DIFF.	Gain/Loss	KMH	DIFF.	Gain/Loss										
13	1 - 2	71	72	74	79	74	74,01	2,57	3,6%	72	72	69	71	72	71,44	-2,57	-3%
15	1 - 2	66	66	66	69	68	66,93	0,00	0,0%	66	68	66	68	68	66,93	0,00	0%
2	1 - 2	64	60	61	61	61	61,46	0,97	1,6%	61	60	61	60	61	60,50	-0,97	-2%
8	2 - 1	64	64	63	64	66	64,36	1,61	2,6%	63	63	63	61	64	62,75	-1,61	-3%
6	2 - 1	64	66	64	66	68	65,65	2,25	3,6%	63	64	63	66	61	63,39	-2,25	-3%
		66,48					1,48	2,3%	65,00					-1,48	-2,2%		

In the above graph it is visible that the gain in speed is depending on the subject, **yellow** is the highest achieved speed overall. Gain varies between 0% and 4% which is show in kmh as well as mph. On average the gain is 1,48 kmh which is 2,3%. Another noticeable advantage is that most players had more stability to shoot with the T-shirt containing the technology.



CONCLUSION by Maarten Groeneveld:

I have conducted this first series of tests using two identical t-shirts, one of them containing the AJP+ Textile Complex technology and the other containing a placebo. Neither the athlete or the instructor knew which of the 2 shirts was the placebo or the firvest at the time of testing. The order of testing (placebo-firvest or firvest-placebo) was totally random and the tests were made inside a hall with no external weather effects. During the tests nobody around was able to tell which T-shirt had the technology.

According the outcome of the above summarized tests, I can now assume with upmost assurance that the use of the FIRVEST:

- Optimizes if not increases the mobility and stability of the athletes
- Optimizes if not improves their performance especially in height jumping and in distance jumping by several percent
- Optimizes if not improves objects shooting abilities of the athletes by a few percent.
- Some Athletes have worn the FIRVEST during test matches and their comments were again unanimously positive; more stability, higher jumps and a global feeling of optimized performance during the match.

Similar tests have been done using a football player shooting the ball and the results so far show the same trend of an increase in ball speed and a better balance of the player at the moment of shooting. Nonetheless, to give an objective opinion on results with football players, and to further consolidate the above results, I would like to repeat the tests on a larger number of players/subjects.

My conclusion is thus, so far, 100% positive and I would like to do more tests in the near future to discover all the advantages this vest could provide to Athletes.

September 7th 2009,

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