Screening and developing Racquet Sports potential with the SportKompas

6th World Congress of Racket Sport Sciences

Bangkok (Thailand)

May 26th 2018

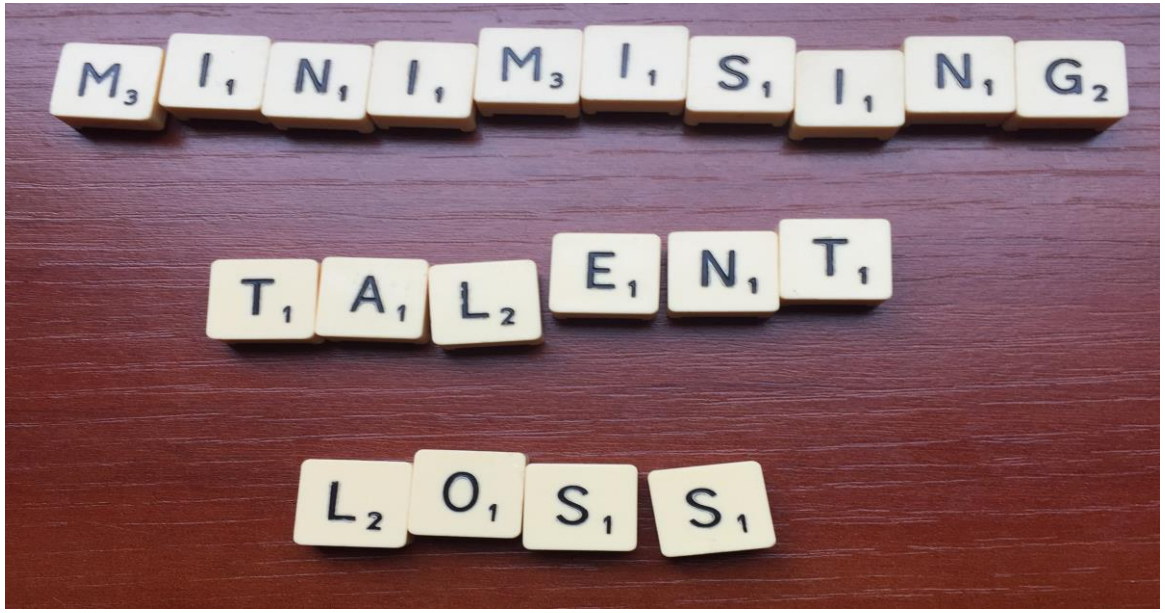
Tengku Fadilah bt Tengku Kamalden, Kamasha Robertson, Mohd Rozilee Wazir Norjali Wazir, Saidon Amri, Anthonius J.W. Teunissen, Nikki Rommers, Irene Faber, Matthieu Lenoir, Johan Pion

The Flemish Talent Pool (N= 6.000.000)

The Malaysian Talent Pool (N= 30.000.000)

SPORTKOMPAS

The Smart Pathway to the podium



16 years

12 years

8 years

4 years

In order to better estimate the sports potential of young athletes a validated tool 'SportKompas' was developed

Identifying Sports Potential

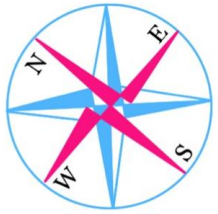
2

SPORT
TALENT

Sports specific
talent identification tool
for Malaysian children

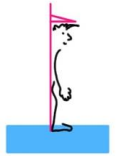
SPORTKOMPAS

Generic tests



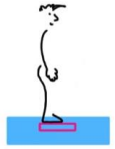
Flemish Sports Compass (2015)

Anthropometry



Stature

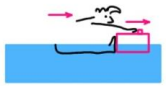
Sitting height



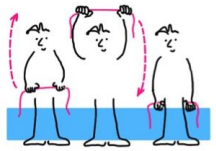
Weight

Fat %

Physical performance



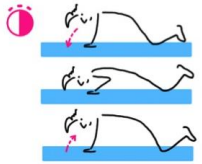
Sit and reach



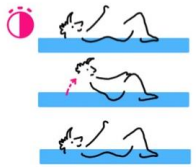
Shoulder rotation

Hand grip

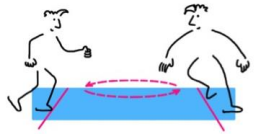
Standing Broad Jump



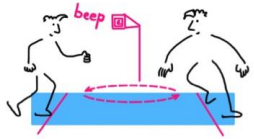
Knee Push-ups BOT 2



Curl-ups BOT 2

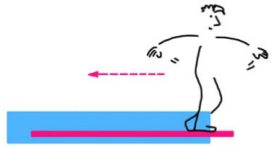


Shuttle run (10x5m)



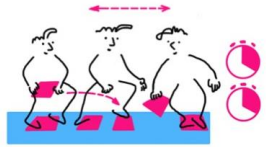
Endurance shuttle run

Motor coordination



Balancing backwards KTK

Jumping sideways KTK



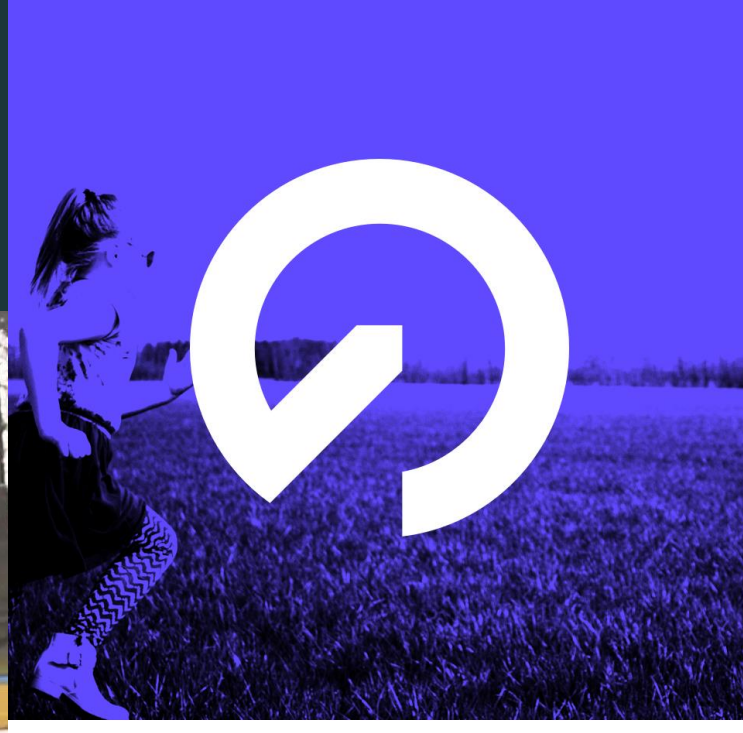
Moving sideways KTK

Dribbling

SPORT KOMPAS

I DO

Physical characteristics = Actual performance



SPORT
KOMPAS
I DO

Motor coordination = Sports potential

SPORT
KOMPAS

I DO

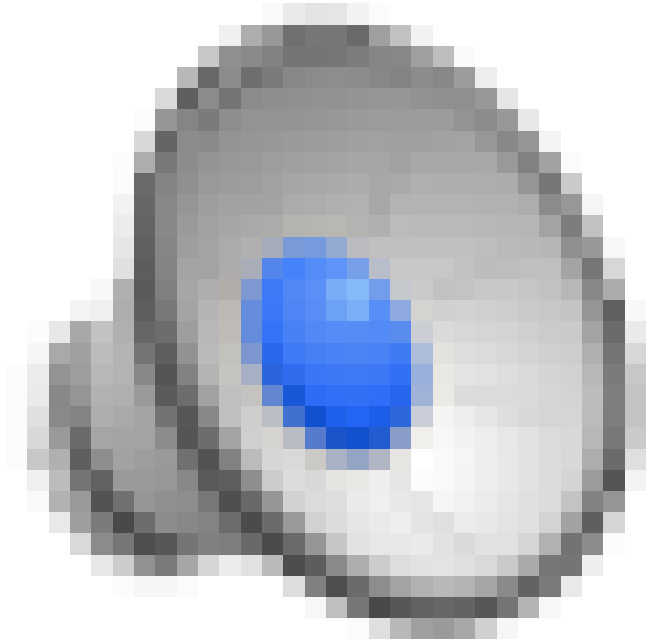
Current practice in talent identification focuses on actual performance rather than potential.

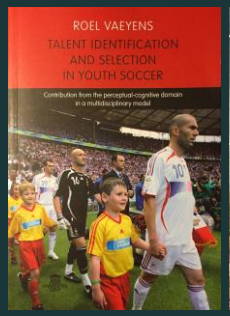
KTK - Balance Beam

KTK - Jumping Sideways

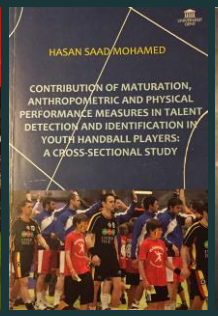
KTK - Moving Sideways

Eye - Hand Coordination (Faber)



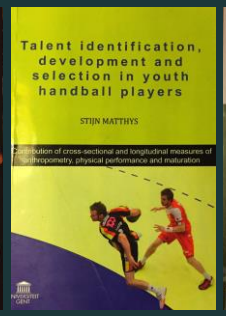


R. Vaeyens



H. Mohammed

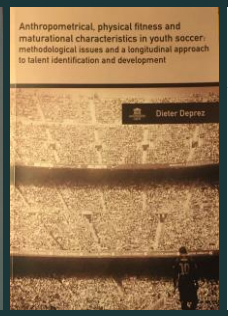
B. Vandorpe



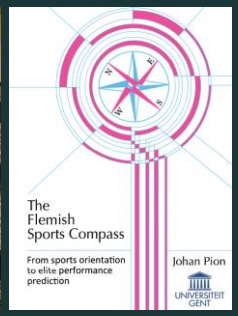
S. Matthys

J. Vandendriessche

J. Fransen



D. Deprez



J. Pion

Talent Identification

SPORTKOMPAS

Badminton (generic)

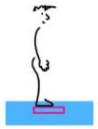
Generic tests

Flemish Sports Compass (2015)

Anthropometry

Stature

Sitting height

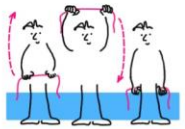


Weight

Fat %

Physical performance

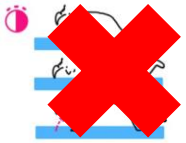
Sit and reach



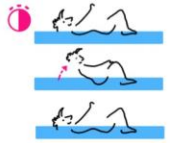
Shoulder rotation

Hand grip

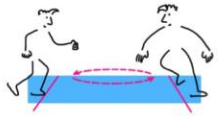
Standing Broad Jump



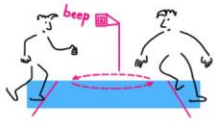
Knee Push-ups BOT 2



Curl-ups BOT 2



Shuttle run (10x5m)

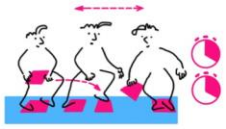


Endurance shuttle run

Motor coordination

Balancing backwards KTK

Jumping sideways KTK



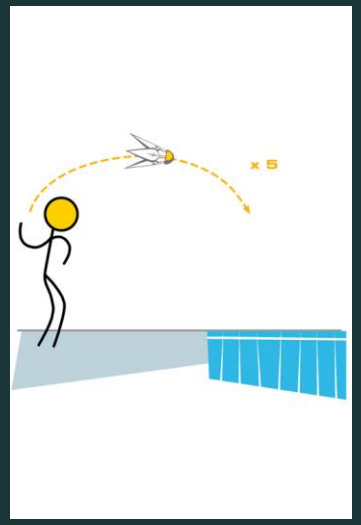
Moving sideways KTK

Dribbling

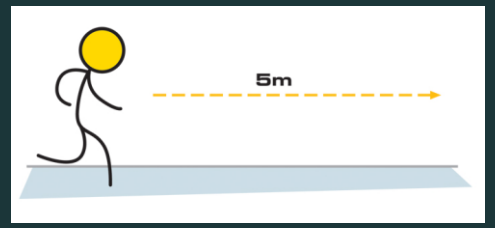
SPORT KOMPAS

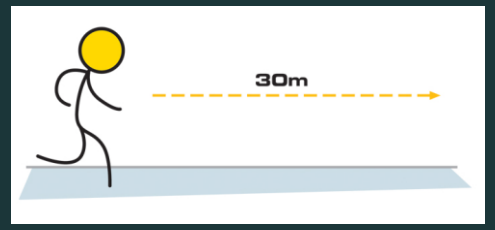
I DO

Badminton (specific)

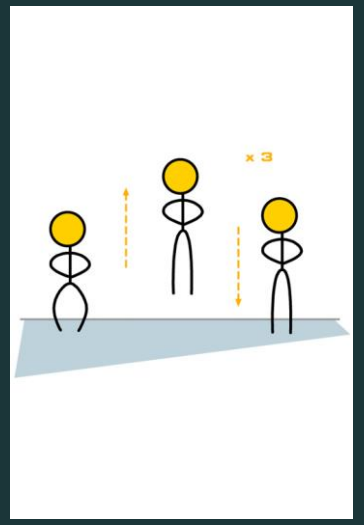


Shuttle Throw





Sprint 5m / 30m



CM Jump

SPORT
KOMPAS

I DO

Growth and Maturation

SPORTKOMPAS

NSCA CEU QUIZ

Available at: http://www.nsca.com/Certification/Continuing-Education/CEU-Quizzes/

Bio-banding in Sport: Applications to Competition, Talent Identification, and Strength and Conditioning of Youth Athletes

Sean P. Cumming, PhD,[1] Rhodri S. Lloyd, PhD,[2,3] Jon L. Oliver, PhD,[2,3] Joey C. Eisenmann, PhD,[4] and Robert M. Malina, PhD[5,6]

[1]Department for Health, University of Bath, Bath, United Kingdom; [2]Youth Physical Development Centre, Cardiff Metropolitan University, Cardiff, United Kingdom; [3]Sports Performance Research Institute New Zealand, Auckland University of Technology, Auckland, New Zealand; [4]College of Osteopathic Medicine, Michigan State University, East Lansing, Michigan; [5]Department of Kinesiology and Health Education, University of Texas, Austin, Texas; and [6]Tarleton State University, Stephenville, Texas

How can we benefit from this study in Badminton?

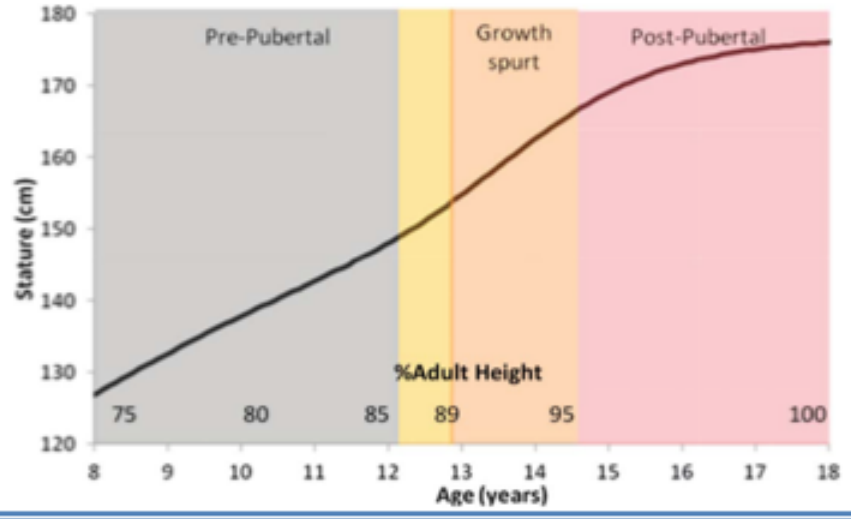
SPORT TALENT TOOL (Elite Flanders schoolers (n=179 players))

Anthropometry

			Lowest	-1 Z	mean	+1 Z	highest
Stature	155,3		155,3	155,2	165,9	176,7	176,8
Body weight	38,4		38,4	38,2	48,3	58,5	58,7
Sitting height	78,4		78,4	77,7	84,8	91,9	92,4
BMI	15,92		15,9	16,0	17,4	18,8	18,8

Growth prediction

Maturity offset (Mirwald et al, 2002)	-1,6
APHV (Mirwald et al, 2002)	14,1
Growth prediction (Sherar et al 2005)	166,9
Growth prediction (curve)	178,4
Grow potential (curve)	23,1
% adult height (curve)	



Bio-bands of maturity for an individual male based on cumulative growth and percentage of adult height (Cumming et al 2017).

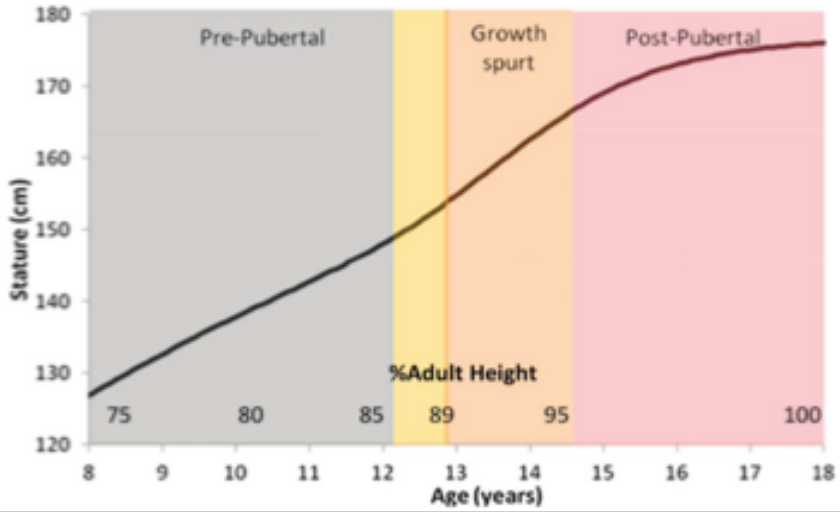
SPORT TALENT TOOL (Elite Flanders schoolers (n=179 players))

Anthropometry

		Lowest	-1 Z	mean	+1 Z	highest
Stature	165,7	155,3	155,2	165,9	176,7	176,8
Body weight	47,9	38,4	38,2	48,3	58,5	58,7
Sitting height	83,6	78,4	77,7	84,8	91,9	92,4
BMI	17,45	15,9	16,0	17,4	18,8	18,8

Growth prediction

Maturity offset (Mirwald et al, 2002)	-0,4
APHV (Mirwald et al, 2002)	13,9
Growth prediction (Sherar et al 2005)	173,9
Growth prediction (curve)	182,0
Grow potential (curve)	16,3
% adult height (curve)	



Bio-bands of maturity for an individual male based on cumulative growth and percentage of adult height (Cumming et al 2017).

Name	Pint	**Ranking Score**	782		
First Name	Lander				
			Year	Month	Day
Gender (M /F)	M	**Date of birth**	1997	9	11
Age	12,51	**Test date**	2010	3	16

Anthropometry

			Lowest	-1 Z	mean	+1 Z	highest
Stature	155,3		155,3	155,2	165,9	176,7	176,8
Body weight	38,4		38,4	38,2	48,3	58,5	58,7
Sitting height	78,4		78,4	77,7	84,8	91,9	92,4
BMI	15,92		15,9	16,0	17,4	18,8	18,8

Growth prediction

Maturity offset (Mirwald et al, 2002)	-1,6
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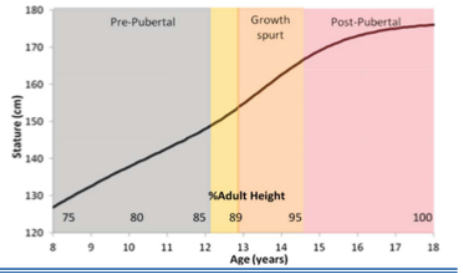

Physical performance tests

			Lowest	-1 Z	mean	+1 Z	highest
Sit and reach (cm)	26		26	26	27	28	29
Sprint 5m (s)	1,161		1,207	1,215	1,148	1,081	1,075
Sprint 30m (s)	4,88		5,04	5,11	4,763	4,41	4,37
Counter Movement Jump (cm)	24,5		24,5	24,7	31,4	38,2	38,0
Standing Broad Jump (cm)	172		172	169	196	223	226
Endurance Shuttle Run (min)	11		11	11	12	13	13

Coordination tests

			Lowest	-1 Z	mean	+1 Z	highest
Balance beam KTK 6 - 4,5 - 3	59		59	58	62	66	67
Jumping sideways KTK	98		97	97	98	98	98
Moving sideways KTK	63		63	63	68	73	73

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Name	Pint	**Ranking Score**	782		
First Name	Lander				
			Year	Month	Day
Gender (M /F)	M	**Date of birth**	1997	9	11
Age	13,526	**Test date**	2011	3	22

Anthropometry

			Lowest	-1 Z	mean	+1 Z	highest
Stature	165,7		155,3	155,2	165,9	176,7	176,8
Body weight	47,9		38,4	38,2	48,3	58,5	58,7
Sitting height	83,6		78,4	77,7	84,8	91,9	92,4
BMI	17,45		15,9	16,0	17,4	18,8	18,8

Growth prediction

Maturity offset (Mirwald et al, 2002)	-0,4
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Growth prediction (Sherar et al 2005)	173,9
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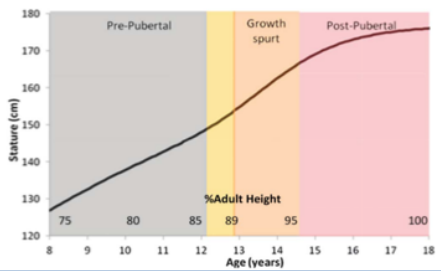
Grow potential (curve)	16,3
% adult height (curve)	



Physical performance tests

			Lowest	-1 Z	mean	+1 Z	highest
Sit and reach (cm)	27		26	26	27	28	29
Sprint 5m (s)	1,207		1,207	1,215	1,148	1,081	1,075
Sprint 30m (s)	5,039		5,04	5,11	4,763	4,41	4,37
Counter Movement Jump (cm)	31,76		24,5	24,7	31,4	38,2	38,0
Standing Broad Jump (cm)	190		172	169	196	223	226
Endurance Shuttle Run (min)	11		11	11	12	13	13

Coordination tests

			Lowest	-1 Z	mean	+1 Z	highest
Balance beam KTK 6 - 4,5 - 3	61		59	58	62	66	67
Jumping sideways KTK	98		97	97	98	98	98
Moving sideways KTK	67		63	63	68	73	73

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Stages of growth and maturation

% of predicted adult height	Training stimuli
< 85% pre-pubertal	Neural adaptations and motor learning
85% - 89 %	Neural adaptations and structural changes
89% - 95%	Reduce load and facilitate structural changes
> 95% post pubertal	Start to train hypertrophy-focused

How other countries can benefit from this badminton tool?

Malaysia elites (world class players)

August 2017	Grant BWF
September 2017	Designing the content of the test battery
October 2017	Training the test team at UPM (HAN – UGent)
November 2017	Data collection growth and maturation (Malaysia)
January 2018	Purchasing and creating test devices and manuals
April 2018	First measurements in sports schools (Malaysia)

Preliminary results of 60 players
Sport School (Malaysia)

Applied prototype of the badminton tool

ONGOING RESEARCH

TID Badminton

Name		**Ranking Score**			
			Year	Month	Day
Gender (M /F)	M	**Date of birth**	2004	5	29
Age	13,91	**Test date**	2018	4	26

Anthropometry

			Lowest	-1 Z	mean	+1 Z	highest
Stature	158,0		144,0	158,8	167,0	175,2	178,0
Body weight	52,0		35,6	47,6	57,4	67,1	84,3
Sitting height	87,6		74,2	82,9	87,4	91,9	94,7
BMI	20,83		16,0	18,2	20,4	22,7	26,6

Growth prediction

Data Collection en Analyses needed

Physical performance tests

			Lowest	-1 Z	mean	+1 Z	highest
Sit and reach (cm)	40		26	30	35	40	47
Sprint 5m (s)	1,27		1,380	1,243	1,166	1,089	1,010
Sprint 30m (s)	5,09		5,25	4,91	4,634	4,35	4,21
Counter Movement Jump (cm)	15,2		15,2	18,7	21,4	24,1	26,8
Standing Broad Jump (cm)	212		190	210	232	254	266
Endurance Shuttle Run (min)	13		9	11	12	14	15

Coordination tests

			Lowest	-1 Z	mean	+1 Z	highest
Balance beam KTK 6 - 4,5 - 3	63		25	46	58	71	72
Jumping sideways KTK	104		78	91	101	112	118
Moving sideways KTK	55		53	59	65	72	80

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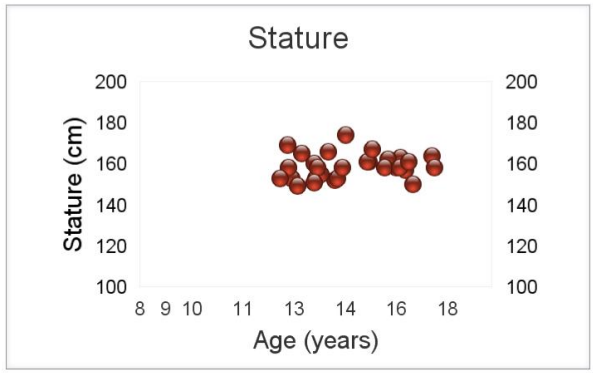
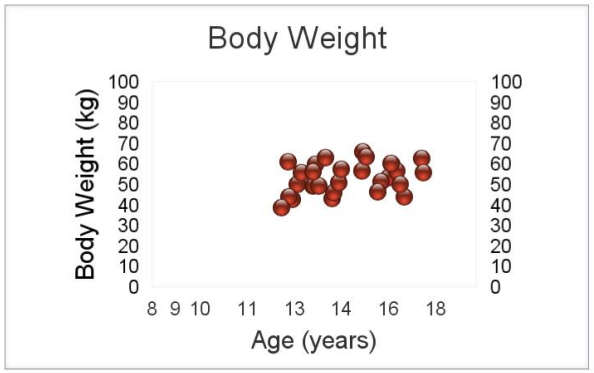
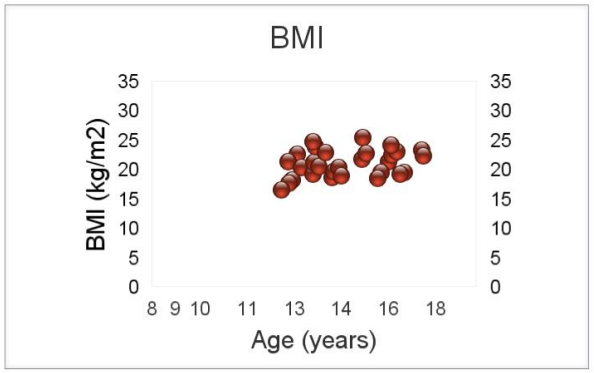
Preliminary Results

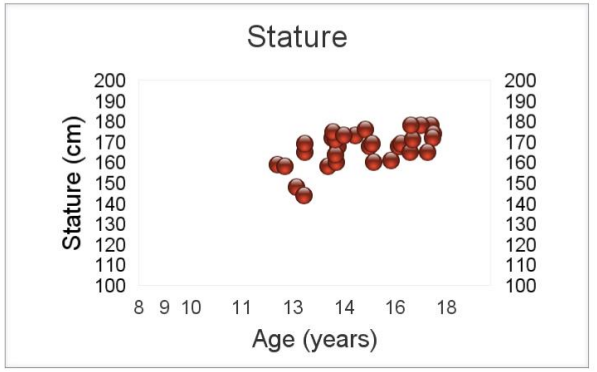
Anthropometry (girls)

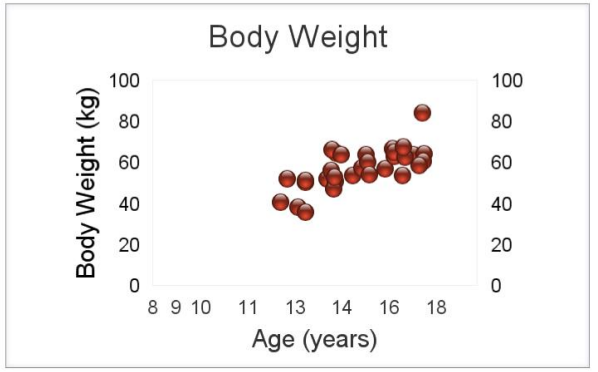


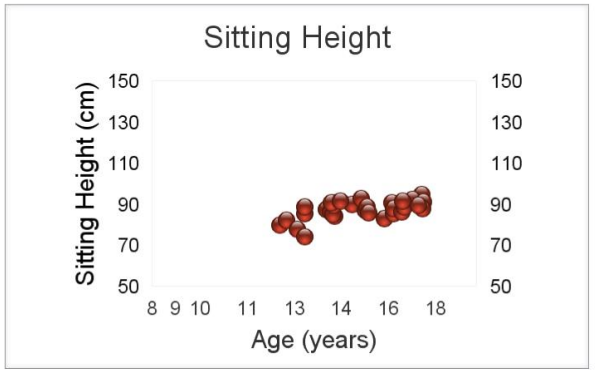


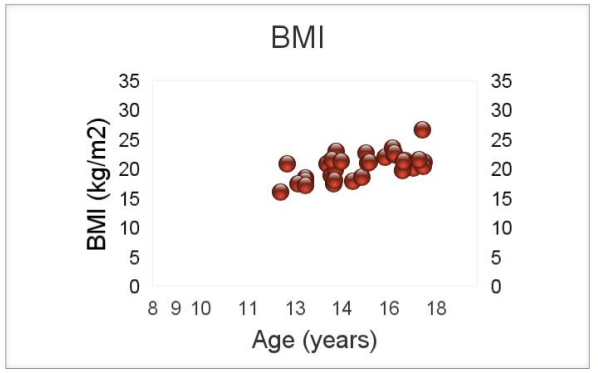


Anthropometry (boys)









Initial Encountered challenges

Training of testers - permanent evaluation of the data collection (video clips) for testers

Prediction of adult stature in Asia (with S. Cumming)

Changing mindset: Measuring potential instead of actual performance

S. Amri

M. Wazir

T.F. Tengku Kamalden

K. Robertson

N. Rommers

M. Lenoir

I. Faber

J.W. Teunissen

J. Pion

THE WAY FORWARD

- BWF report phase 2
- Cooperation of Badminton Association of Malaysia towards continuity of project
- Adjusting the Badminton Tool
- Longitudinal follow-up by UPM - Ghent – HAN (Grants)
- More training for testers
- Including elite sports clubs

https://su.vc/nysijppvsml

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