Talent Identification Lessons From Cycling

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Outline

- Who am I?

- Talent Identification
  - Lessons learned
  - Applied across multiple sports

- Off-feet Conditioning

- Sport specific examples

Lesssons Learned

- Use equipment that is accurate & provides repeatable and comparable data:
    - Rowing ergometer (but needs extremely good technique)
    - Cycling ergometer

- Use appropriate, practical tests including:
    - Power (6"- 30")
    - Submaximal
    - Maximal
    - Sprint/Endurance combination (UCI/WCC)

- Define power and physiological markers that establish sport specific standards which have practical training value

- Young Adults (14+)

Sport Specific

- Cycling/UCI/WCC
- SA Commonwealth Games Selection
- Ice Hockey
- Rugby (Union and League)
- UK Army
- Sailing/Americas Cup
- Rowing
- Football/Soccer
- Athletics/Boxing/Speed skating
- Japan Olympic Games/Cycling/Keirin/Rowing/Baseball/JISS
- USA Olympic Team Selection

第68回高松宮記念杯競輪 GI

S級

決勝

11R
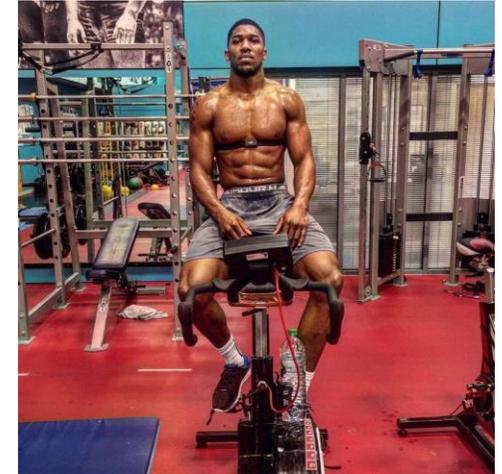
6		5		4		3	2	1
9	8	7	6	5	4	3	2	1
武田	井上	吉田	成田	稲垣	山田	平原	新田	村上
豊樹	昌己	拓矢	和也	裕之	英明	康多	祐大	義弘
88	86	107	88	86	89	87	90	73
茨城	長崎	茨城	福島	京都	佐賀	埼玉	福島	京都

岸和田

Power Profile Test

- Worldwide standard test protocol – Power Profile Test

  - 17' progressive leg speed warm up - 90 rpm to 120 rpm

  - 6" peak power, 6" peak power, 30" power/fatigue, 4' aerobic

  - 6"/30" at 'loading' equivalent to 7.5% of body mass (fixed higher 'loading for elite male and female)

  - 4' aerobic segment at 100 rpm on appropriate 'loading' derived from a submaximal test (fixed 'loading' for elite male and female)
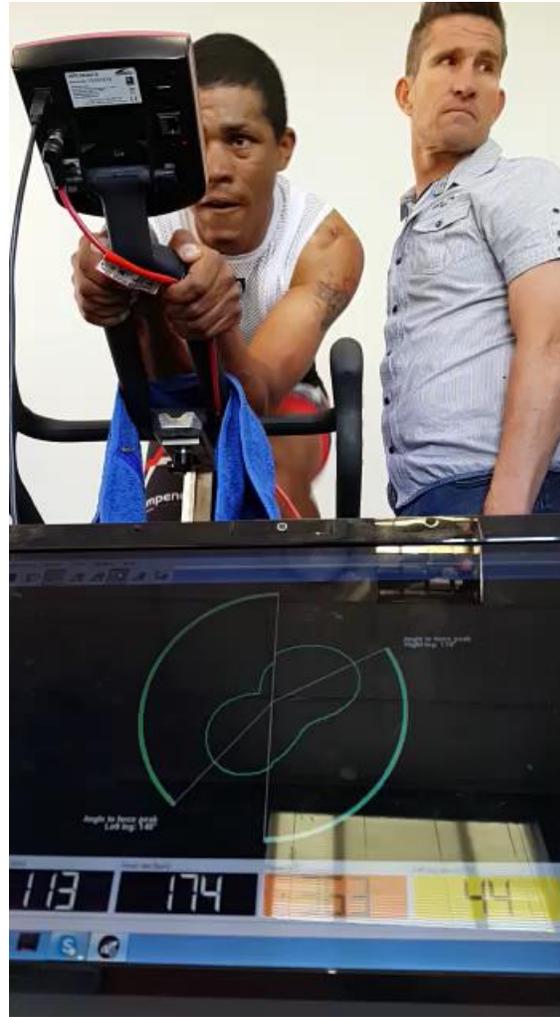
Power Profile Test

- 2016 – 533 tests
- 2017 – 300 + to date

- Central data base of all results from around the world
- Established standards by age, gender and cycling discipline
- Published papers – delivered at the World Congress of Cycling Science 2016 and 2017

Power Profile Test

- 2016 World Junior Track Championships – Mongolia's first Gold Medal

- The Centre's coaches detected the young Mongolian's talent when he attended a short training camp at the WCC satellite centre in Korea in 2015

- After studying the data from his performances on the Wattbike (stationary training bike) the coaches contacted the Mongolian Cycling Federation at the beginning of 2016 and invited him to join the trainees based in Aigle

TEST	Normal (W/kg)	High (W/kg)	Junior (1) (W/kg)	Junior (2) (W/kg)	Elite (W/kg)	Elite (rpm)
6" Peak	7.0 - 11.0	11.0-21.5	21.5 – 22.5	22.5 – 23.5	23.5 – 25.5	165-170 peak
30" Mean	6.0 – 8.5	8.5-10.5	10.5 – 11.5	11.5 – 12.5	12.5 – 13.5	145-160 mean

TEST	Normal (W/kg)	Junior (1) (W/kg)	Junior (2) (W/kg)	Elite (W/kg)
4' Mean	2.5 - 6.0	5.0 – 6.0	6.0 – 7.0	6.5 – 7.5
3' Mean	2.75 - 6.65	5.6 - 6.65	6.65 – 7.8	7.2 – 8.3
Mean rpm	90 - 105	100 - 105	105 -110	110 - 115

TEST	Normal (W/kg)	High (W/kg)	Junior (1) (W/kg)	Junior (2) (W/kg)	Elite (W/kg)	Elite (rpm)
6" Peak	6.0 – 9.0	9.0-16.5	16.5 – 17.5	17.5 – 18.5	18.5 -19.5	160-165 peak
30" Mean	5.0 - 7.0	7.0-8.0	8.0 – 9.0	9.0 – 10.0	10.0 – 11.0	140-145 mean

TEST	Normal (W/kg)	Junior (1) (W/kg)	Junior (W/kg)	Elite (W/kg)
4' Mean	1.5 - 4.0	3.5 – 4.0	4.0 – 5.0	4.5 – 5.5
3' Mean	1.65 - 4.4	3.9 - 4.4	4.4 – 5.65	5.0 – 6.1
Mean rpm	90 - 100	95 - 100	100 - 105	105 - 110

Monark (restrictions)

Peak power (5")
Fatigue (H5"/L5")
Real time (practical)
measurement

Ice Hockey 30" Test

Year	2017	2016	2015	3- year mean
Players	99	98	109	102
Mean Body Mass (kg)	85.2	88.1	85.7	86.3
Mean power (W)	946	953	912	937
Mean power per kilo (W/kg)	10.7	11	10.9	10.9
Mean rpm	115	118	117	117

Top UK Rugby League Team

- UCI Test

- Player specific
  - Power Profile Test (UCI)
    - Power and physiological markers
  - 30/15 vIFT (a run test)

- Simulate game physiological/power play responses (GPS)
  - Adaptation
  - Accumulation

- Structure, consistency, progression

Player	W/Kg	Peak (W)	Average (W)	Body mass (kg)
1	18.09	1795	1672	99.2
2	17.92	1766	1660	98.5
3	17.31	1873	1558	108.2
4	16.91	1943	1522	114.9
5	16.81	1755	1583	104.4
6	16.41	1902	1682	115.9
7	16.32	1552	1378	95.1
8	16.07	1744	1479	108.5
9	15.95	1691	1452	106.0
10	15.74	1685	1416	107.1
11	15.69	1831	1537	116.7
12	14.97	1506	1333	100.6
13	14.91	1771	1518	118.8
14	14.91	1482	1238	99.4
15	14.68	1719	1585	117.1
16	14.4	1638	1440	113.8
17	13.83	1749	1522	126.5
18	13.83	1508	1349	109.0
19	13.64	1325	1311	97.1
20	13.49	1501	1471	111.3

			LSSP		RPM				Adjusted	Level	Z2-Z3	Z3	Z3-Z4	Warm up
Test Level	Less 2	120	125	130	135	140	145	150	Pro	Trainer	90	95	100	
6	4								4	10+4	4	4	4	2

Top UK Rugby League Team

- Following a pre-season 12 week off-feet conditioning plan

  - Reduced injury risk - zero reported muscle tissue injuries in pre-season

  - Increased conditioning stimulus - 200 minutes of specific off feet conditioning per week

  - Increased time on training skills and playing the sport - 186 minutes extra per week

Top UK Rugby League Team

- Aerobic improvement - overall gains 15%-25%

- Peak power increase – mean 16.4 W/kg (n=19) – overall gains 20%-25%

- Leg speed – all players 115 up to 150+ to match game speeds [from GPS]

- Correlates with a standard 30/15 IFT running test – 2-4 level improvement

- Championship Winners – Super 8 playoffs (3 wins out of 3 so far)

UK Army

- Replaced running with a cycle test for deconditioned personnel, will be an option for all personnel over 35

- Military research indicates that off feet testing and conditioning reduces injury significantly without loss of running (aerobic) ability)

- Army pass standard fixed at 70th percentile (Western population) – it is age and gender fair

- Submaximal ramp test and 10' continuous ride at age and gender P/kg

UK Army

Table 1 – 10' A3 Test Standards 70 points

Age	Male	Female
<29	2.85 or more	2.35 or more
30-34	2.80 or more	2.30 or more
35-39	2.75 or more	2.25 or more
40-44	2.70 or more	2.15 or more
45-49	2.65 or more	2.10 or more
50-54	2.60 or more	2.00 or more
55-59	2.55 or more	1.95 or more
60-64	2.35 or more	1.90 or more