

Performance Assessment Metrics, Talent Assessment, OPA Eligibility & Weeding Out/Retention for Weightlifting

Protocol of Weightlifting is bifurcated into four parts which is mentioned below:-

1. Talent Identification
2. Performance Benchmark Process
3. Assessment Camp
4. Age Verification Test

1. Talent Identification

Competitions to be considered for talent identification:-

1. National Championship (Senior)
2. National Championship (Youth and Junior)
3. Khelo India Games (Youth & University)
4. School Games (SGFI)
5. University Games (AIU)
6. State Level Competition of Manipur, Andhra Pradesh, Odisha and Maharashtra
7. Zonal Competition (TBD)

2. Performance Benchmark Process

a) Performance Analysis

The purpose of this segment is to devise a standard system to assess and analyze the progress of a Weightlifter across three age groups: Youth (13-17Yrs), Junior (15-20Yrs) and senior (20+Yrs).

b) **Minimum Criteria for Retention of Khelo India and NCOE Athletes (Men and Women) in the Protocol** The details of the criteria are as follows:

Criteria For	Minimum Grade
Induction of KIA/NCOE Athletes	X
Retention of KIA/NCOE	A

The following protocol for creating benchmark of grade lift:

c) Performance Benchmarks

Considering results of major events, the results included are as follows:

1. Up to 1 most recent Olympic Games with current weight categories
2. Up to 2 most recent World Championship with current weight categories
3. Up to 2 most recent Asian Championship with current weight categories

The 1st, 2nd, 3rd and 8th position performances are considered from these competitions. The average of 2 best lifts for each position from the data points above is considered as position-wise benchmark for the weight category.

For each position benchmark standard is calculated as an Average of the all 1st, 2nd, 3rd, and 8th positioned lifts are taken to create a Global Performance Standards (Annexure -2).

** New Weight Categories would be considered for benchmarking as per change in the regulations by IWLf*

d) Derivation of Age Specific Progression Standards

The 3rd and 8th position lift of each weight category of each age group (Youth, Junior and Senior) is set as benchmark. 2 deviations “Deviation A” and “Deviation B” are taken:

- Deviation B = Standard Deviation of 3rd and 8th position across all age group.
- Deviation A = 50% of Deviation B

The Progression time of Youth, Junior and Senior age groups are divided into 6 progression times (I-VI) which are as follows:

- I (bronze medal benchmark lift for Senior)
- II (8th position benchmark lift for Senior)
- III (bronze medal benchmark lift for Junior)
- IV (8th position benchmark lift for Junior)
- V (bronze medal benchmark lift for Youth)
- VI (8th position benchmark lift for Junior)

e) Estimation of Discipline Specific High-Performance Age

- Results of 2 latest Sr. World Championships (long course) and 1 latest Continental Championship is considered.
- Age of all medallists in all weight categories, as on year of their win, from the 6 competitions is recorded.

High-Performance Age of medalist for all the weight categories is estimated as follows:

- Birth year of all medallists from World and Continental Championship was considered and age of medallists as on medal winning year was calculated.
- The ages were sorted weight wise and outliers are removed to arrive at an estimate age range for high performance age for the Weightlifting discipline.

f) Analysis and Grading Indian Weightlifters Performances

The Weightlifters are graded and categorized as per the below grades and qualification benchmarks derived from the above-mentioned process:

Grades	Remarks	Point System
AAAA	High Chance of Medal	3 rd Position
AAA	Medium Chance of Medal	Average of 3 rd and 8 th Position
AA	Qualifying for top 8	8 th Position
A	High Chance to Qualify	8 th Position minus Deviation A
X	Medium Chance to qualify	8 th Position minus Deviation B
No	No chance to qualify	--

- Athletes graded as X, A or AA can likely be inducted into NCOE/ Khelo India Schemes.
- Retention of KIA/NCOE Athletes will be done if they achieve a minimum grade A.
- Athletes graded as AAA and AAAA can likely be inducted into the TOPS Scheme.
- The benchmarking evaluation metrics is detailed at ANNEXURE-2.

3. Assessment Camp

i. Technical and Scientific Assessment

Following physical, motor-ability & skill-based performance and Sports Science tests as part of technical and scientific assessment would be conducted on Weightlifters to assess their physical growth and fitness.

Test and Performance Matrix

Tests	Frequency	Measurement
Physical and Fitness Test		
Height (standing height and sitting height)	Twice a year	(CM)
Arm Span	Twice a year	(CM)
Length of Hands	Twice a year	(CM)
Standing Vertical Jump (Single and Both Legs)	Twice a year	(CM)
20 meters sprint	Twice a year	(Seconds)
5 kg Medicine Ball Throw (Males) 3 kg Medicine Ball Throw (Females)	Twice a year	(Meters)
Shoulder Flexibility Test	Twice a year	(CM)
Standing Press	Twice a year	Count (Number)
Dips	Twice a year	Count (Number)
Chin Ups (Overhand Grip)	Twice a year	Count (Number)
Back Squat	Twice a year	(KG) Maximum Weight
Dead Lift (Categorize as weight as given in procedures)	Twice a year	(KG) Maximum Weight
Competitive Lifting Test	Twice a year	(KG) Maximum Weight

ii. Sports Science Evaluation

Frequency: Twice a Year (Half Yearly)

S.NO.	TEST NAME (Physiological)	UNITS	Frequency
I	Resting heart rate	Beats per minute	Twice a year
II	Blood lactate	(mM/L)	Twice a year
III	Maximum anaerobic capacity (Wingate Test or RAST)	(Watt/kg)	Twice a year

IV	Heart rate at 1watt/kg work load (Exercise duration 2 minute) and Heart rate at 2 watt/kg work load (Exercise duration 2 minute)	Beats per minute	Twice a year
V	Back Hamstring	Kg	Twice a year
VI	Leg Strength	Kg	Twice a year
VII	Hand grip Strength	Kg	Twice a year
VIII	Upper Body And Trunk	Cm	Twice a year
IX	Lower Back	Cm	Twice a year
S.NO.	TEST NAME (Biochemical)	UNITS	Frequency
I	Complete Haemogram		
a	Haemoglobin	g/dL	Twice a year
b	Packed Cell Volume	%	Twice a year
c	RBC Count	mill/mm ³	Twice a year
d	MCV	fL	Twice a year
e	MCH	Pg	Twice a year
f	MCHC	g/dL	Twice a year
g	Red Cell Distribution Width (RDW)	%	Twice a year
h	Total Leukocyte count (TLC)	thou/mm ³	Twice a year
i	Differential Leukocyte Count		
j	Segmented Neutrophils	%	Twice a year
k	Lymphocytes	%	Twice a year
l	Monocytes	%	Twice a year
m	Eosinophils	%	Twice a year
n	Basophils	%	Twice a year
o	Absolute Leukocyte count		
p	Neutrophils	thou/mm ³	Twice a year
q	Lymphocytes	thou/mm ³	Twice a year
r	Monocytes	thou/mm ³	Twice a year
s	Eosinophils	thou/mm ³	Twice a year
t	Basophils	thou/mm ³	Twice a year
u	Platelet Count	thou/mm ³	Twice a year
II	Iron Profile		
a	Serum Iron	µg/dL	Assessment Required Twice in a Year only for
b	Ferritin	ng/mL	
c	Unbound Iron Binding Capacity	µg/dL	
d	Total Iron Binding Capacity	µg/dL	athletes with Anemia/ low hemoglobin
e	Transferrin Saturation	%	
III	Muscle Markers		
a	Creatine Kinase	U/L	Special evaluation parameter. These parameters can be assessed only after considering the sports-specific training protocol
b	Lactate dehydrogenase	U/L	

IV	Urea	mg/dL	Twice a year
a	Blood Urea Nitrogen	mg/dL	Twice a year
b	Creatinine	mg/dL	Twice a year
c	Uric Acid	mg/dL	Twice a year
V	Testosterone/Cortisol		
a	Testosterone	ug/dL	Special evaluation parameter These parameters can be assessed only after considering the sports-specific training protocol
b	Cortisol	ug/dL	
c	Free Testosterone	Pg/mL	
d	Free Testosterone/ Cortisol	Ratio	
VI	Vitamins		
a	25 (OH) Vitamin D	ng/mL	Twice a year
VII	Lipid Profile		
a	Total cholesterol	mg/dL	Twice a year
b	Triglycerides	mg/dL	Twice a year
c	HDL- cholesterol	mg/dL	Twice a year
d	LDL-cholesterol	mg/dL	Twice a year
e	VLDL- Cholesterol	mg/dL	Twice a year
VIII	Urinalysis		
a	Glucose	Conventional Units	Twice a year
b	Protein		Twice a year
c	pH		Twice a year
d	Specific Gravity		Twice a year
e	Bilirubin		Twice a year
f	Urobilinogen		Twice a year
h	Blood		Twice a year
i	Leukocytes		Twice a year
IX	Minerals		
a	Calcium	mg/dL	Twice a year
b	Phosphate	mg/dL	Twice a year
c	Magnesium	mg/dL	Twice a year
S.NO.	TEST NAME	UNITS	Frequency
	(Anthropometrical)		
I	Body Composition Analysis	PDF Document Upload Option	Twice a year
a	Height	Cm	Twice a year
b	Weight	Kg	Twice a year
c	Body Mass Index	kg.m ⁻²	Twice a year
d	Sitting Height	Cm	Twice a year
e	Arm Span	Cm	Twice a year
f	Waist Hip Ratio	waist(cm)/ hip(cm) *score <1	Twice a year

g	Segmental analysis for muscle and fat areas	mm (milimetre)	Twice a year
S.NO.	TEST NAME (Psychology)	UNITS	Frequency
I	Mental Toughness (Psychological Performance Inventory)		
a	Self Confidence	Score	Twice a year
b	Negative Energy Control	Score	Twice a year
c	Attention Control	Score	Twice a year
d	Visualization and Imaginary	Score	Twice a year
e	Motivation Level	Score	Twice a year
f	Positive Energy Control	Score	Twice a year
g	Attitude Control	Score	Twice a year
II	CSAI – II (Competitive State Anxiety Inventory)	Score	Twice a year
III	Balance - Static (Vienna Test System)	Percentile	Twice a year
S.NO.	TEST NAME (Nutrition)	UNITS	Frequency
I	Macronutrient Intake		
a	Energy	KJ/d	Twice a year
b	Carbohydrate	g/d	Twice a year
c	Protein	g/d	Twice a year
d	Fat	g/d	Twice a year
II	Micronutrient Intake		
a	Iron	mg/d	Twice a year
b	Calcium	mg/d	Twice a year
c	Potassium	mg/d	Twice a year
d	Selenium	mg/d	Twice a year
e	Sodium	mg/d	Twice a year
f	Manganese	mg/d	Twice a year
g	Retinol	µg/d	Twice a year
h	β carotene	µg/d	Twice a year
i	Thiamine	mg/d	Twice a year
j	Riboflavin	mg/d	Twice a year
h	Total Folates	µg/d	Twice a year
i	Vitamin B12	µg/d	Twice a year
j	Total Ascorbic Acid	mg/d	Twice a year
k	Total Vitamin D	µg/d	Twice a year
III	Hydration		
a	Total Body Water	%	Twice a year
b	Extra Cellular Water	%	Twice a year
c	Intra Cellular Water	%	Twice a year
d	Hydration	%	Twice a year

e	Total Fluid Intake	L	Twice a year
IV	Energy availability and dietary intake, food frequency	Number (Range)	Twice a year
V	Energy cost for physical activity and Total energy expenditure		
a	RMR	Kcal/d	Twice a year
b	Non Exercise Energy Expenditure	kcal per hour & number of hours	Twice a year
c	Exercise Energy Expenditure	kcal per hour & number of hours	Twice a year
d	Sleep	Number of Hours	Twice a year
S.NO.	TEST NAME (Biomechanics)	UNITS	Frequency
I	Force Measurement with force platform	mm, kN, Hz & kg	Twice a year
II	Speed and agility measurement through electronic gates	Minutes and Seconds	Twice a year
III	Video Analysis to see the barbell trajectory	-	-

4. Age Verification Test

Potential athlete recommended by TIDC will be selected for the NCoE & Khelo India Academies subjected to the Age Verification Test which will be organized & verified by Human Performance Lab (SAI).

Weightage of Assessment Heads for Evaluation of Weightlifters

Type of Assessment	Youth (13-17 Years)	Junior (15-20 Years)	Senior (20+Yrs)
Performance Assessment	20%	40%	60%
Scientific Assessment	40%	30%	20%
Technical Assessment	40%	30%	20%

Men's															
Weight Category	Youth (13-17 yrs)					Jr (15-20 yrs)					Sr. (20yrs+)				
	TOPS		NCOE/KI			TOPS		NCOE/KI			TOPS		NCOE		
	AAAA (Mhigh)	AAA (Mmed)	AA (Q)	A (Qhigh)	X (Qmed)	AAAA (Mhigh)	AAA (Mmed)	AA (Q)	A (Qhigh)	X (Qmed)	AAAA (Mhigh)	AAA (Mmed)	AA (Q)	A (Qhigh)	X (Qmed)
49	193	172	151	140	129	-	-	-	-	-	-	-	-	-	-
55	228	219	211	200	189	245	222	200	189	178	260	250	240	229	218
61	261	249	237	228	220	270	261	251	242	234	295	287	280	271	263
67	272	259	247	237	227	308	296	285	275	265	323	314	305	295	285
73	289	272	256	244	233	324	311	298	286	275	343	337	331	319	308
81	310	290	271	259	247	329	320	311	299	287	364	356	348	336	324
89	313	298	284	271	258	347	335	324	311	298	376	367	358	345	332
96	313	305	296	280	265	354	339	324	308	293	389	379	369	353	338
102	318	301	283	268	254	356	341	325	310	296	390	377	365	350	336
102+	318	303	289	274	260	-	-	-	-	-	-	-	-	-	-
109	-	-	-	-	-	371	345	318	298	278	416	399	382	362	342
109+	-	-	-	-	-	384	354	324	296	268	455	436	418	390	362
Women's															
Weight Category	Youth (13-17 yrs)					Jr (15-20 yrs)					Sr. (20yrs+)				
	TOPS		NCOE/KI			TOPS		NCOE/KI			TOPS		NCOE		
	AAAA (Mhigh)	AAA (Mmed)	AA (Q)	A (Qhigh)	X (Qmed)	AAAA (Mhigh)	AAA (Mmed)	AA (Q)	A (Qhigh)	X (Qmed)	AAAA (Mhigh)	AAA (Mmed)	AA (Q)	A (Qhigh)	X (Qmed)
40	125	113	100	90	81	-	-	-	-	-	-	-	-	-	-
45	155	145	135	125	116	154	136	118	108	99	170	160	151	141	132
49	165	155	146	136	127	168	159	150	140	131	202	191	181	171	162
55	174	168	162	154	146	191	184	177	169	161	213	204	194	186	178
59	187	178	170	162	154	196	192	189	181	173	225	217	210	202	194
64	193	186	178	170	163	211	201	191	183	176	227	221	215	207	200
71	197	189	182	172	162	222	212	202	192	182	242	238	235	225	215
76	202	192	182	172	162	224	209	194	184	174	245	234	224	214	204
81	214	198	182	172	163	220	209	199	189	180	250	239	228	218	209
81+	216	201	187	177	168	-	-	-	-	-	-	-	-	-	-
87	-	-	-	-	-	215	198	181	166	151	252	242	233	218	203
87+	-	-	-	-	-	239	219	200	182	165	284	271	257	239	222