

**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. State Level Competition of Manipur, Andhra Pradesh, Odisha and Maharashtra
5. 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) The Minimum Criteria for Retention of Khelo India and NCOE Athletes (Men and Women) shall be as follows:
- i. An athlete initially selected in KIA/NCOE Scheme with a grade lift of AAAA or AAA, shall maintain the same grade lift;
 - ii. An athlete initially selected in KIA/NCOE Scheme with a grade lift of AA, A or X shall be retained if they have the next higher grade lift;
 - iii. An athlete who has shown significant improvement in performance;
 - iv. A well performing athlete who, due to injury has not maintained his/her performance for a year as per point 2 b) sub-point i, ii or iii may be retained in the KIA/NCOE scheme based on his/her's Coach's and Doctor's report specifying the nature and extent of injury and recovery time.

c) Performance Benchmarks

The following is the protocol for creating benchmark of grade lift:

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 1 most recent Commonwealth Games with current weight categories.
3. Up to 3 most recent World Championship with current weight categories
4. Up to 3 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 IWLIF.*

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.

f) 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.

g) 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	--

- A Merit List will be prepared with the Athletes graded as AAAA, AAA, AA, A or X. Athletes higher on the merit can be inducted into the Khelo India Scheme as per available vacancy. Remaining athletes can be inducted into the NCOE Scheme as per Benchmarks.
- Retention of existing KIA/NCOE Athletes will be done as per Point 2 b).
- The benchmarking evaluation metrics is detailed at *Annexure-1*.

3. Assessment Camp

It shall be mandatory for all Khelo India Athletes to attend two Assessment Camps in a year. Absence from both may lead to weeding out of the Athlete from the Khelo India Scheme.

a) 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)
30 meters Fly	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)
800 m Run	Twice a year	Min & Seconds
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

b) 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 1 watt/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		Twice a year
b	Protein		Twice a year
c	pH		Twice a year

d	Specific Gravity	Conventional Units	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 (millimetre)	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%

Protocol Benchmarks

Men's															
Weight Category	Youth (13-17 yrs)					Jr (15-20 yrs)					Sr. (20yrs+)				
	TOPS		NCOE/KI			TOPS		NCOE/KI			TOPS		NCOE		
	AAA A (Mhig h)	AA A (Mme d)	AA (Q)	A (Qhig h)	X (Qme d)	AAA A (Mhig h)	AAA (Mme d)	AA (Q)	A (Qhi gh)	X (Qme d)	AAA A (Mhig h)	AAA (Mme d)	AA (Q)	A (Qhi gh)	X (Qme d)
49	205	178	151	136	122	-	-	-	-	-	-	-	-	-	-
55	228	220	211	196	182	246	216	185	170	156	260	250	241	226	212
61	261	249	237	225	214	267	255	243	231	220	300	294	289	277	266
67	272	259	247	236	226	302	289	276	265	255	323	314	305	294	284
73	289	272	256	244	233	324	311	298	286	275	343	337	331	319	308
81	310	290	271	259	248	330	323	316	304	293	364	356	348	336	325
89	313	298	284	270	257	343	335	327	313	300	381	371	361	347	334
96	316	306	296	280	264	361	342	324	308	292	389	382	374	358	342
102	318	301	283	267	251	360	342	325	309	293	393	384	376	360	344
102+	319	303	287	271	255	-	-	-	-	-	-	-	-	-	-
109	-	-	-	-	-	376	354	333	316	299	416	400	384	367	350
109+	-	-	-	-	-	384	356	329	301	273	460	440	421	393	365

Women's															
Weight Category	Youth (13-17 yrs)					Jr (15-20 yrs)					Sr. (20yrs+)				
	TOPS		NCOE/KI			TOPS		NCOE/KI			TOPS		NCOE		
	AAA A (Mhig h)	AA A (M me d)	AA (Q)	A (Qhig h)	X (Qme d)	AAA A (Mhig h)	AAA (Mme d)	AA (Q)	A (Qhi gh)	X (Qme d)	AAA A (Mhig h)	AAA (Mme d)	AA (Q)	A (Qhi gh)	X (Qme d)
40	125	113	100	95	90	-	-	-	-	-	-	-	-	-	-
45	155	145	135	130	125	153	148	142	137	132	170	160	151	146	141
49	165	155	146	133	120	170	152	135	122	109	203	195	187	174	161
55	174	168	162	154	146	187	182	177	169	161	213	204	194	186	178
59	187	178	170	160	150	198	194	190	180	170	232	226	220	210	200
64	193	186	178	171	164	207	201	196	189	182	227	221	215	208	201
71	197	189	182	170	158	222	212	202	190	178	253	246	240	228	216
76	202	192	182	172	163	222	209	197	187	178	245	234	224	214	205
81	214	198	182	171	161	222	214	206	195	185	259	249	240	229	219
81+	216	201	187	176	166	-	-	-	-	-	-	-	-	-	-
87	-	-	-	-	-	219	200	181	166	151	252	244	236	221	206
87+	-	-	-	-	-	249	229	210	193	177	288	276	265	248	232