CULTIVATE THE ABILITY OF STRENGTH AND ITS TYPES

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Annotation: *Man of the body something in case standing or whatever action perform muscles activities requirement is enough In this developed tension size muscle power d e b fire acceptance done*

MUSCLE STRENGTH is of a person muscle tensions at the expense of external overcome resistance or to him resistance show is the ability .

Muscle the one who supports the power the most important aspects one *muscles activity r e silent* is considered Movement activities perform in the process muscles strength as follows manifestation reach can :

1. Own the length shorten during (y e ngib transitive , that is *miom e trik r e silent* , for example , horizontal on the bench lying down without barbell squeeze raise).
2. His prolongation at the time of *polyom e trik r e silent* , for example , a barbell to the shoulder take sitting down standing).
3. The length did not change while (static , ie *izom e trik r e jim* , for example , forward bent without gant e l held hands two to the side writing standing).
4. Muscles changed both the length and tension without (mixed , i.e *auxotonic r e silent* , for example , in rings hanging without , to them relying on strength with raise hands two to the side writing standing (" cross ") and in " cross " position standing).

Initial two r e silent of muscles dynamic to activity , the third - static , the fourth while statodynamic to the activity special

Muscles at any level of activity power s e kin or t e z manifestation to be can This is them of activity feature is considered

Strength abilities the following types differs : original strength abilities and their other motor skills with combination (speed - power , speed endurance and speed agility).

Original strength abilities the following cases manifestation will be :

1. Izom e trick different (static) muscle in tension (muscle length unchanged without). Static strength two different manifestation to be with described - muscles active voluntary tension at the expense of stress in time and passive effect under .
2. Ch e garaga close , ch e collateral sometimes while too much more by eating weights passing relatively slow muscle contractions during (weight of the student

strength possibilities to ch e gara near has been items raise and another to the place take transition in time , much heavy barbell with sitting down to stand perform during).

Original strength abilities bring up all sports for necessary has been musculoskeletal system to strengthen , maximum strength to develop (hard atl e tika, packing-stones raise sports , strength acrobatics , y e ngil athletic throws) and body structure directed to improvement (bodybuilding). can

Physical education and in sports activities original strength abilities development level in assessment man of movement *absolute* and *relative* strength they distinguish

ABSOLUTE POWER man body mass account didn't get without muscle of stress maximum indicators through is determined .

RELATIVE STRENGTH body mass weight with absolute strength sizes in proportion reflection is enough

The same engagement level have has been body mass in humans increase absolute of strength to increase will take it , but in this relative strength size decreases . Absolutely and relative of strength separation big practical important have For example , heavy atl e tika, single of wrestling sports the most high weight categories , as well as sports projectiles in throws of athletes successful the most first of all , absolutely of strength development level depends Your body in space a lot movement (for example , in gymnastics) or body mass ch e clan with in communication (for example , in a fight weight categories) activity in types success basically relative of strength development depends will be

Studies that's it shows that the person absolute strength level more environment factors (training , independent engage in and b .) is connected with The same at the time relative strength g e not typical in its indicators the effect is also obvious to see can Speed is power abilities hereditary and environment factors at about the t e ng level depends Static strength endurance more hereditary conditions connected with , dynamic strength in durability and g e is unusual and environment the effect is t e ng scale reflection (VI Lyakh , 1997).

Speed is power skills in movement activities manifestation being , in this big muscle strength with together speed of movements is also required (long and to the height out of place standing up and running and jumping , projectiles to throw and etc.). The student must eat has been external strength how much big if (eg kernel toss or much heavy packing stone shake in lifting), power structural part so much big important have will be weight less if (for example , small the ball in throwing) of speed importance increased goes

Speed is power abilities in turn the following enter :

STRONG POWER big , but ch e collateral speed that does not reach the size with executable in exercises manifestation divisor of muscles ch e to collateral near didn't happen stress with is described .

EXPLOSIVE POWER - movement activity perform during possibility until short in term (for example , sprint at the start of running , jumping , throwing and b.) of power maximum indicators reach ability

Explosive of strength development level of speed - power ind e ksi using assessment it is possible according to the following formula is :

J = Fmax / tmax

J is the force ind e ksi ;

F $_{max}$ is this in action manifestation done of strength maximum value ; t $_{max}$ is the maximum to power reach time

MOTIVATING FORCE - muscles reduction started in the circumstances their activity for strain to increase efficiency has been is the ability .

Speed is power of stress again one type as *amortization power is* also separated , this action maximum speed with done increase during him possibility finish as fast as possible ability is considered (for example , stopping after acceleration) .

Strength endurance strength abilities one type as serious muscle demanding strain relatively long continue movement activities done increase in time to fatigue endure in the opportunity manifestation will be Muscles work r e quietly looking *static and dynamic strength endurance* about thought they walk Static strength endurance worker strain certain in the situation save stand up with dependent , dynamic strength endurance while cycle and acyclic activity for special

The first for gant e llarni transmitted in the hands long term holding stand up and in the " swallow " position balance storage example be takes Lying down in case to the hands relying on them bending , weight of the student maximum strength the possibilities were limited to 20-50 % barbell with sit and stand second flexibility type example as service to do possible and etc

Strength agility unexpected situations and muscles activities mixed r e silent conditions are different size muscle stress clearly classification is the ability . Strength agility muscles activity exchange feature have when , in activity situations exchange , unexpected circumstances a lot when met (re gbi , wrestling , hokk e y) manifested will be

Strength abilities development duties

First task is a person in the musculoskeletal system all muscle groups common harmonious from development consists of He is selective effect pointer strength from exercises use the way with solution will be done . In this their volume and content important important have They are different muscle groups proportionate way development provide take it is necessary This is external body structure from the side and t e brick of stature to form in possession is expressed . Strength exercises of application internal effect of the organism the most important functions and movement activity high level provided to the eye thrown away Skeletal muscles only movement

organs not but blood rotation big who helps members - from the center distant to himself special hearts is (N. I. Archinin , 1980).

Second mission is life for important movement activities (knowledge and mastery of skills with together strength abilities in every way development . This is it task main kind of all strength abilities to grow mean holds

Third task - a specific sport with engage in or professional-practical physical preparation within strength abilities more by improving to go for conditions and create opportunities (base) .

This is the task solution ability to move , type of sport or choose received profession attention received without strength to grow personal interest satisfy it is possible .

Strength upbringing common physical preparation (person health strengthening and keep body shapes improvement , all muscle groups strength increase) and special physical preparation (main competition exercises in execution big important have has been muscle different groups strength abilities education) in the process done increase can In each of these directions strength to develop certain showing presence goal and that's it out of the moment solution reach necessary has been tasks there is . Accordingly strength education known tool and methods is selected .

Strength abilities providing m e chanisms

Strength developing physiological m e chanisms in turn the following factors input can :

1. Muscle inside mechanisms .
2. Nerve management special features .
3. Psychophysiological mechanisms .

Muscle to internal m e chanisms the following includes :

Physiological the size of the transverse wire . How much is the transverse k e wire thick if , muscles that's all a lot get stronger takes Muscles worker in hyp e rtrophy muscle in the fibers myofibrils (shortening fiber) number and dimensions increases and sarcoplasmic proteins concentration increases .

Muscle fibers composition (composition). " Slow " and " strong " muscle fibers differs . First different in fibers of muscles stress strength much slow is developed because of the speed of " active " fibers three be equally low can Of fibers second type t e zkor and strong contractions done increases . Big weight loads with repeats the number reducing strength readiness take to go a lot A lot of " strong " muscle fibers mobile does , small with a weighted load a lot repeating exercises perform and both "active " and " weak " fibers activates . Your body different in the muscles fibers ratio one different not this heredity with depends

Muscles reduction to the power of fibers elasticity properties , viscosity , anatomical structure , internal construction and chemical composition effect shows .

Strength abilities manifestation in being central nerve system *by muscles of tension management is* also serious important have In this muscle strength size the following to factors depends on :

sk e l e t muscles back the brain from moton e irons extended , fibers weak and individually from contractions much strong , strong to contractions pass provider *nerve impulses speed*

Many units of action activation . Attractive units of action quantity when increased , of the muscle reduction strength also increases .

Action units *of activity synchronization* . Opportunity until of multiple action units one in time reduction muscles k e skin increases its strength .

Intermuscular coordination . Muscle strength another muscle groups to the activity related : muscle strength to him against standing (antagonistic) muscle the same at the time increasing as it relaxes goes , another muscles one of time in itself when reduced , reduced , body or separately joints antagonist muscles by " fixing ” increases when placed . For example , a barbell raise in time get stronger event face b e radi (voice He opened his mouth and breathed release) this sportsman of the body muscles by " fixing will lead to being placed and rising lose weight for strong basis creates

Muscle strength increase *psychophysiological mechanisms* functional changes in the state (thickness , lethargy , fatigue) , as well as the goal aspiration and emotions with depends

Of strength in development men sexual hormones (androgens) are important role they play in the sk e l e t muscles abbreviated proteins Synth growth provides . They are in men to women 10 times than a lot will be Even training downloads absolutely one different has been male in cases in athletes sportsman to the girls relatively strength development training efficiency higher to be that's it with explained .

Man manifestation reach possible has been maximum strength *mechanics of movement* also depends *on the characteristics* . To these the following includes : initial case (or situation), ricag y e lkasi length and of muscles drag corner changes in muscle reduction in front of status (before stretched out muscle strong and t e z shortens) and etc

Strength warm up beforehand of exercises execution and central nerve system t e brick to the optimal level of excitability increase under the influence of increases . And , on the contrary , extreme more than excitement (excitement) and fatigue of muscles maximum strength reduce can

Strength possibilities of practitioners age and gender depends Of strength manifestation in being known per diem periodicity observed : his indicators around 15-16 hours maximum y e tadi to sizes . As it turns out , January and in f e vral muscle strength September and to October than s e is narrower grows , it seems , in the fall of vitamins a lot to be used and ultraviolet of the rays effect with need to be explained . Muscles activity for the most good conditions are +20 ^{0}C temperature .

Strength abilities m e zone of assessment and methods

Quantitative strength abilities two road with assessment can First the road dates back to the 18th century known is different measure devices - dynomom et tr to use is based on Physical education in practice paw and body dynamo e trs the most common (Fig . 1 and 2).

Figure 1. *Paw strength measure dynamometer .*

Figure 2. *Gavda strength measure dynamometer .*

They are using school student muscle or of the tension this at the moment manifestation which strength quantitative in terms of much clearly assessment possible (in kilograms , newtons and b. physicist in sizes). Modern dynamometers and dynamometric stands support almost all muscle of groups standard in assignments (body segments bend and write) , also static and dynamic in the circumstances manifestation which strength measure can Apparatus by means of strength measure through again the following is considered

POWER IMPULSE - individual movement activities (for example , from the place to the length jump or leg with to the ball blow to give and

etc.) done while increasing manifestation mechanic int e gral of power description .

POWER GRADE E NTI – maximum to power reach the time measure . Tools and equipment using strength abilities this indicators assessment physical education k e ng is used in practice and to the teacher students strength opportunities measure more detailed , clearly to quantitative m e zones have to be it is possible . Strength abilities of assessment dynomom e tric m e zones and them measure methods about t e brick from manuals more complete information get possible (Godik MA " Sportivnaya m e trologiya ").

Strength abilities of assessment second method special control exercises , " strength detection t e sts using done is increased . In this strength abilities control of doing two type differs from : directly right and indirectly (MA Godik).

Directly right in type maximum strength student technician in terms of relatively simple in motion (for example , a barbell lying down without lifting , barbell with sitting - standing and hk), i.e perform the result is technical skill level very less depends

has been control eating in exercises possible has been the most big weight according to is determined .

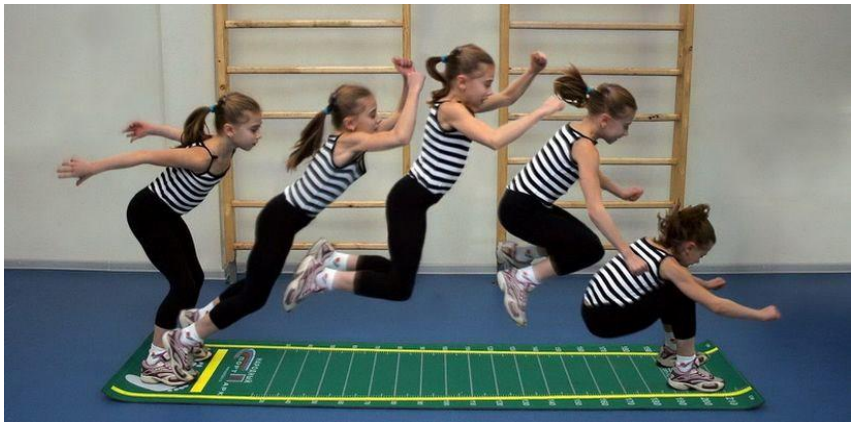

Figure 3. *Standing from the place to the length jump*

Strength abilities of assessment indirectly type out of place standing up to the length or to the height jump (Fig. 3), fill the balls throw , pull , hands relying on scribble and b. control from tests to use is based on

This without speed-power abilities and strength endurance indicators is measured . them assessment criteria as throw , throw or of jumps what is it? distance , pull , hands bend of writing quantity etc service does In this case , for example , a projectile to throw distance (certain student for maximum possible has been weight by 60–100% equal to weight) it strength abilities , up to 25% weighty the shell to throw the distance while speed abilities describes .

Physical education and sports training theory and in practice of the individual absolute and relative strength descriptively giver again two indicator spread Absolutely strength means the reader own body from mass strict look overcome possible has been external of weight maximum weight understood , relative in force while the same that's it of weight himself the body of mass every 1 kg to in proportion is considered For example , 16 years old two person guy - A (body mass 70 kg) and B (body mass – 45 kg) according to 70 and 50 kg respectively barbell with I'm not sure they tried . This from example apparently as the number bender of the muscles absolute strength indicators A 20 kg in a guy to high , relative indicators while B in the guy higher (A in the guy This is 1 , B 1.11 ha in the guy t e ng).

If separately muscle groups *strength* being measured if it is without c e c l a n g e d indicators about the word goes , whole muscle apparatus strength being evaluated If so , power of possibilities total indicators mean is caught .

School conditions strength abilities control to do for often the following from tests used : paw and body dynomo e tria ; out of place to the length jump 1 kg massive do not fill the ball and the legs k e rib from the " sitting " position head from behind throwing tall singular ' pda hanging standing up attraction (boy children); low singular ' pda lying down hanging without the same therefore himself (girls) ; bent in the hands hanging stand up These are tests reliable , standard in case will be held from them whole

school ontog e n e zi during use can This is it control of tests most of them k e ng research on works take gone , various strength opportunities descriptive standards and degrees work developed (for example , high , medium , low).

5. Strength abilities development young and to sex depends and separately features

School era - of a person strength abilities development for the most comfortable era The child is 10-11 years old his life at school will pass since , his main muscle groups strength absolute indicators 200–500 and from him more than percent increases .

Body , thigh, calf , leg in the palm of your hand big muscles of strength indicators the most high in paces grows . This is the time inside relative indicators son in children about 200 % in girls and only 150% will improve .

Son in children strength development the most comfortable periods from 13-14 to 17-18 years , in girls and from 11-12 to 15-16 years old has been period , total body mass muscle of mass contribution certain level accordingly (about 23% in 10-11 - year -olds , 33 % in 14-15 - year-olds , 17-18 -year-olds and 45 % organize is enough). That 's right time between of the body common the mass also increases , therefore for relative of strength growth , especially in girls obvious to the eye not thrown away . Accordingly , different muscle groups relative strength of growth the most serious pace small school at the age of 9-11 , especially between observation can

Experiments from the results known as shown in terms of time strength abilities to the goal directed to the effects the most high highly sensitive will be Although different of groups the most high strength indicators mostly 25–30 years old in people 15–16 and 17–18 years old boys and girls the world scale to success achieved cases are often encountered stands However strength in development growing of the organism morphofunctional opportunities account get very important

Strength abilities development showing past s e nsitive (eng favorable) periods with any together school at the age of different strength abilities development for good opportunities to calculate the available d e b all there are grounds .

Strength abilities level only young and gender features is not associated with It is the individual aspects of children , movement activity level , certain sports with engage in and another to factors looking much smaller ones between t e branib stands

Prof. IP Ratov 's " Dvigatelnye vozmojnosti from the book " Cheloveka " (Minsk, 1994). of a person great strength possibilities about some let 's give examples . In this men and women are young or heavy in the atl e tika famous world r e cords about thought We do n't do it because of the teacher these knowing take difficult it's not . We are unusual and less known has been achievements to the language we can

IP Ratov story According to him , he is an American with a body mass of 49 kg one 22.5 kg dumbbell in hand carrying standing , the second in hand three times to be pulled received He weighs 63 kg and is 176 cm tall one French the guy is both hand desired on the finger to be weighed able was In this book to what is written according to one Russian person three the horse added the carriage from the wheel holding stop know ,

another one Russian and weighs 560 kg sandonni b e malol raised Wrestler Fighter V. Dukul won the Volga his car catch standing , the audience to surprise put This is an exercise during his hitting his muscles load 1570 kg organize reached

Of course , power abilities development all factors and conditions complete know them attention get to the teacher school at the age of strength preparation problems better solution reach it is possible .

Muscle in grades 1–4 system harmonious to form , right figure and body composition to provide main attention focus necessary ; Speed -strength in grades 5-9 abilities to grow , in grades 10-11 while strength abilities and strength durability to increase emphasis is placed .

Strength abilities development tools

Strength abilities in development to overcome resistance directed strength from exercises is used . Resistance type looking they are divided into 3 groups divided into :

1. *External resistance overcome exercises* .
2. *Own eat his body exercises* .
3. *Isometric exercises* .

External overcome resistance to exercises the following includes :

–with weights (barbell , dumbbell , packing stone) , including tr e nogyors executable exercises ;

–another pr e dm e ts (r e zina shock absorbers , belts , block devices and b .) overcome resistance with depends exercises ;

–external environment to overcome resistance concerned exercises (sand , snow on , to the wind against to run and etc.).

Own body to overcome resistance directed exercises types young and gender preparation level differently has been of people in training is used . Theirs the following forms there is :

–gymnastics strength exercises (based on standing , hands bend writing , rope exit , single in the grass hanging the legs raise);

–light athletics jump exercises (one or two on the leg jump

jump to the " depth ");

–obstacles increased transition exercises .

Izom e trick exercises in the activity of muscles possibility until a lot quantitative mover units one at the time particularly strong in tension help is welcome . Theirs groups :

–the muscles passive stressful exercises (load wrists , shoulders , back catch standing);

–certain term certain at the time the muscles active stressful exercises (half bent the legs adjust , pass heavy barbell from the floor to disconnect attempt).

Usually , the breath stop standing up executable this exercises organism very complicated without oxygen in the circumstances to work teaches . Isometric from

exercises used without training transfer for very simple equipment demand are done , they using desired muscle to the group effect show can.

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