

Creative Strength Training

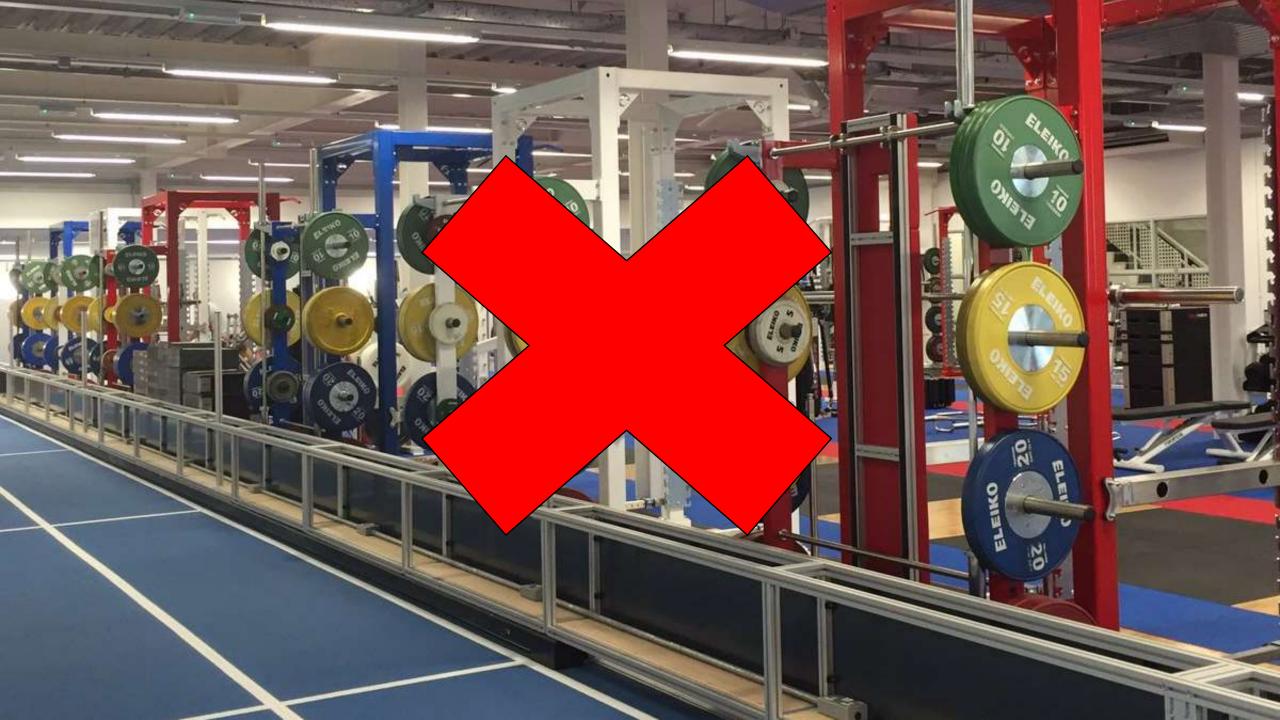
Ben Sheath







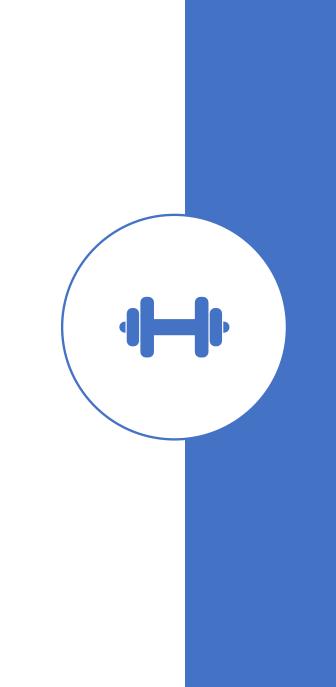




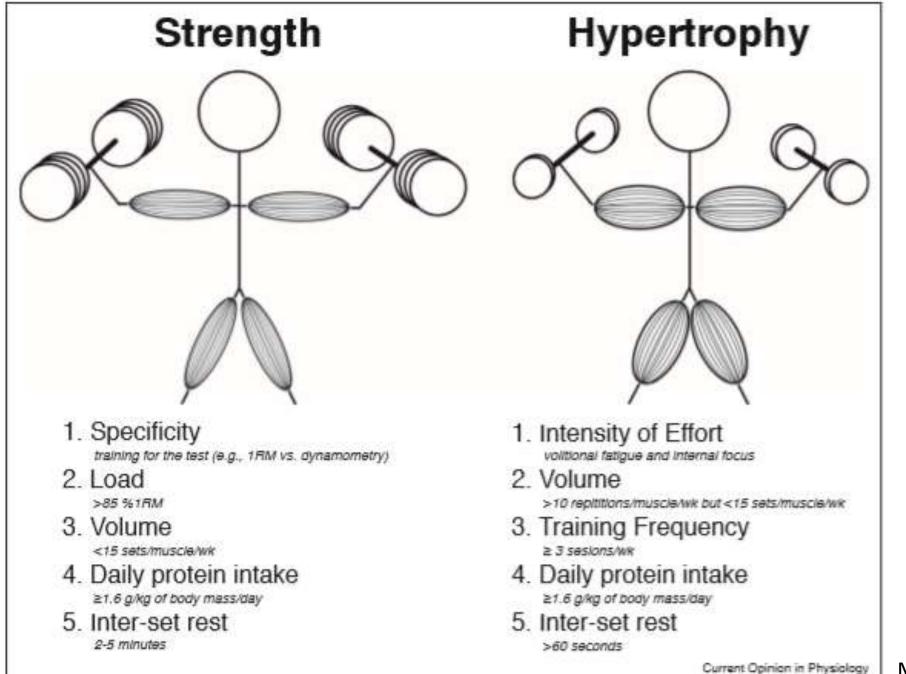
Strength in Rowing

Determinant of Erg performance

Glue!



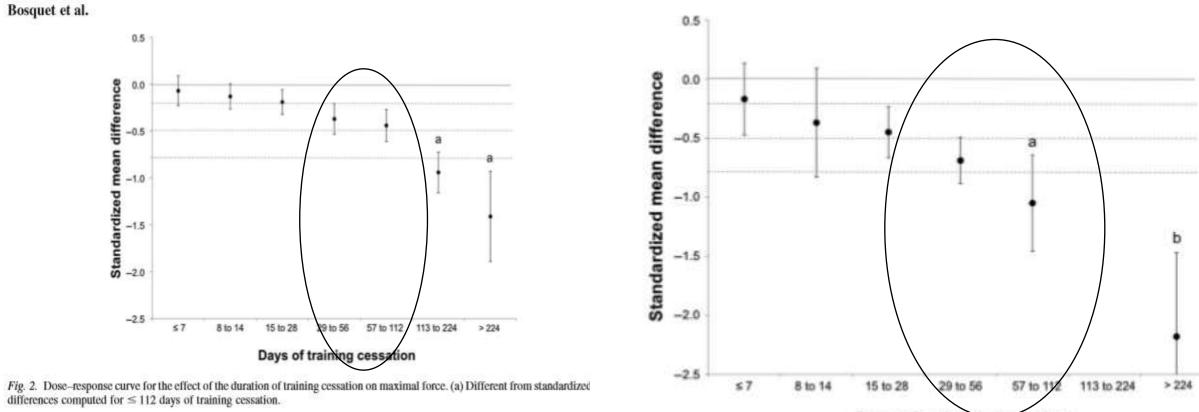




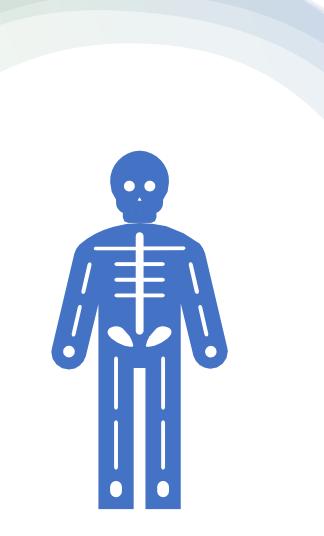
Morten et al., 2019

USE IT OR LOSE IT!

	Fitness Component	Residual Effect (days)	Characteristics
	Speed (maximal)	5 ±3	Neuromuscular and motor control, creatine phosphate recovery
	Strength Endurance	15 ±5	Slow twitch fiber hypertrophy, aerobic/anaerobic enzyme activity, local blood circulation, lactate tolerance
	Anaerobic Glycolytic Endurance	18 ±4	Anaerobic enzyme activity, lactate accumulation rate, buffering capacity, glycogen storage
	Aerobic endurance	30 ±5	Aerobic enzymes activity, mitochondria number, glycogen storage, muscle capillaries, fat oxidation rate
<	Strength (maximal)	30 ±5	Neural control, muscular hypertrophy



Days of training cessation



'8-13% loss in EMG activation after 2 weeks of cessation'

(Mujika & Padilla, 2003)



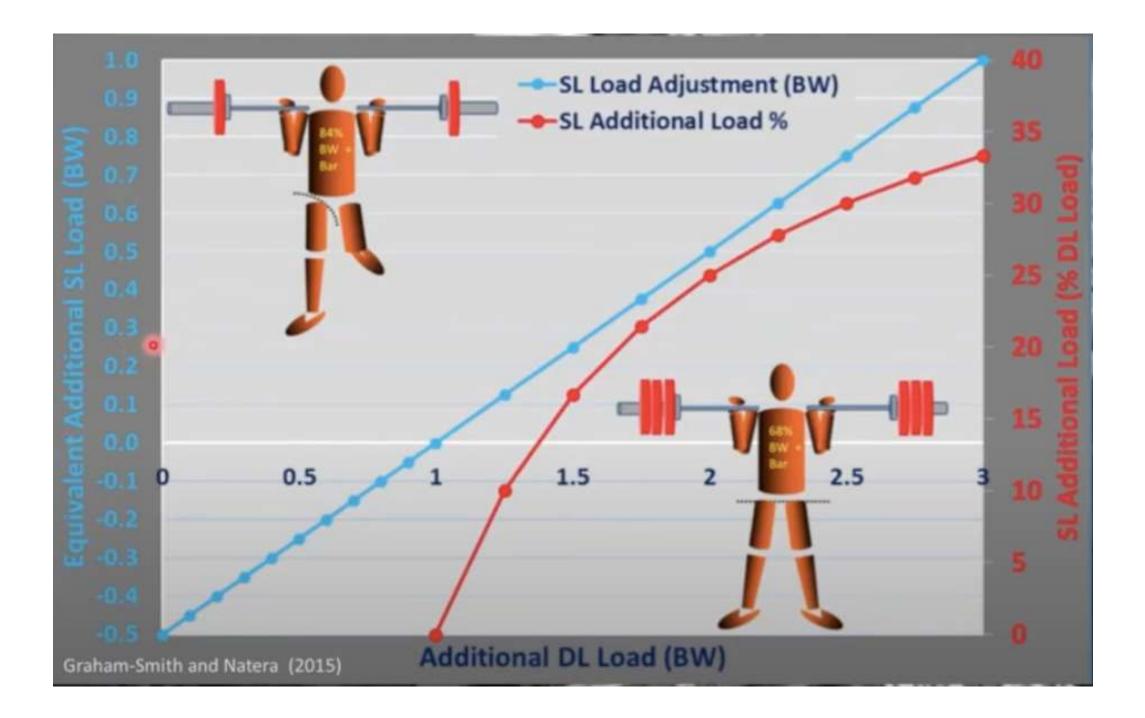








APPLYING THE SCIENCE





Minimal Dose

Garcia-Palleres et al., 2009

- 5WK Training Cessation vs Reduced Training in World-Class Kayak
- 1xPW @ >85% (BP -3.9% vs -8.9%; PBP -3.4% vs -7.8%)
- Still require specific power training 🗡

Ronnestad et al., 2010

- 1 x PW for 13 weeks preserved Strength and CSA
- Highly specific sporting action

Androulakis-Korakakis et al., 2019

- Meta-Analysis
- Single set possible if intensity is high →
 Frequency through week important
- 'Effort' is key

	Body mass	LP5	
Rowing and weight training (%)	0.5 ± 2.8	9.1 ± 8.5†	12.3 ± 8.6
Rowing only (%) % Adjusted difference in	-0.6 ± 4.8 -1.1	-1.0 ± 5.3 -9.3	5.3 ± 13.4 -6.2
performance outcomes 90% CL	-5.2 to 3.0	-15.1 to -3.0	-22.9 to 14.1
p value	0.61	0.03	0.52

TABLE 3. Percent change in group means $(\pm SD)$ and differences in performance outcomes adjusted for pretest scores (log-transformed data).*

*LP5 = 5-repetition leg press; IP = isometric pull; CL = confidence limit. $\dagger \rho = 0.01$.

Ulinch et al. [69]	36 athletes (9 females and 27 males) Isometric vs. Dynamic vs. Combine	Saw Ulbich at al. (68)	Isometric: Increase in knee estimation peak power at 40% (20%) & 60% (20.3%) of 18M and knee Bestein peak power at 40% (47.8%) & 60% (25.4%). Dynamic: Increase in lotest extension peak power at 40% (26.7%), 50% (21.2%) & 80% (19.4%) of 18M and knew Bestein peak power at 40% (53.3%), 60% (25.%) & 80% (19%). Combined: Increase in losest extension peak power at 40% (28.1%) & 60% (10.3%) of 18M and knew Bestein peak power at 40% (29.9%) & 60% (13.2%).
Wei¥ vt.aL.[70]	13 adults (7 females & 6 males) Training vs. Control leg (Intra-Individual comparison)	Training: 3 sessions/week for 6 weeks 2 × 10 × 6 s single log isometric knee extension at 80% MVC.	Training: Increase in isometric torque at 2 knee angles (22.3–23.3 %).
Weir	17 female co		E.

(10,2-18.6%).

(4.3-5.1%).

and mancle CSA (23 S).

muscle CSA (4.8%).

muscle CSA (3,5%).

(9.4-1553)

(13,133).

-5.310

Endurance: Increased in shoulder abduction

(9.8-13.9.3), flexion (11.5-15.1%) and outward

rotation strength (7.5–9.0%) and grip strength

Trained: Introduced in manimum strength 101 T %

transfric; Increase in isometric force (34.2%) an

Concentric: Increase in isometric force (15.4%) and insucle CSA (5.7 %).

Ercentric: increase in isometric force (10.8 %) and

isometric: increased normetric strength at 4 joint.

SG: Increase in power while lifting heaviest load

fasciele angle (16%), isometric torque (53.2%) and concentric & eccentric torque (14-40%).

60%: Increase in muscle volume (5.3%), fascicle

Subjects who trained near 03 MVC: Increase MVC

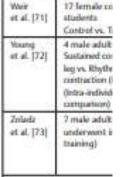
angle (15%), isometric torque (60.2%) and ncentric & eccentric torque (19-40%).

100%: Increase in moscle volume (12.4%).

angles (27-36%), power at 4 intunsity levels

(34-95%), and arm circumference (1.8%). FG: Increase in power while lifting light loads

Kubo et al. [35]	9 male adults Short muscle length (ST) vs. Long muscle length (L3) training leg (Intre-individual comparison)	4 sensions/week for 12 weeks ST: 6 × 15 s 50 %-70 % MVC isometric knee extension at 50 ° knee flexion. LT: 6 × 15 s 50 %-70 % MVC isometric knee extension at 100 ° knee flexion.	ST: Increase in MVC at trained angle (49%) and 40°-80° know angles and EMG activity (-3-8%), LT: Increase in MVC at trained angle (44%) and 40°-120° know angles, EMG activity (-7-10%) and stiffness (50.9%).
Kubo et.al. (36)	14 male adults Control vs. Training	Training: 4 aasainna/week for 12 weeks 10×15s 70% MVC isometric leg press	Training: Increase in MVC (12.4.5), stiffmans of tendon-aponeurous (14.5), EMG activity (~3–8.5), 5] height (5.5), duration of push off phase during CMJ (9.4.5) and decrease in knew angular velocity during CMJ (8.6.5)
Lon at al. [37]	31 male adults Isometric (IM) vs. Isotunic (IT) vs. Isokinetic (IK)	3 setsions/week for II weeks IM: 10 = 1 s single leg isometric leg extension at multiple knee angles and 75 S maximal voluentary torque. IT: 4 = 10 single leg isotonic leg extension at 75 % of 1 repetition max. IM: 4 = 10 single leg isokinetic leg extension.	M: Increase in isometric force at 4 knee angles (26.6-34.2%), 18M knee extension (19.8), isokinetic torque at 3 angular velocities (11.2-14.2%) and muscle mass (3.1%). IT: Increase in isometric force at 4 knee angles (13.4-20%), 18M knee extension (36.3%), pular velocities



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		PT 41
Garfiniol & Calandii (20)	15 unitentary female university students Control vs. Experimental	Equ 3 ×
Goldmann et al. [21]	27 healthy male adults Control vs. Esperimental	Ep 4*
Hagburg et al. [22]	69 formale adults with shouldar and neck injuries. Endurance vs. Strength	3 w End con Strengtlic: 10 = 5 x 90° isometric shoulder flexion at maximal confluction;
Bai & Fukunaga (25)	6 male adults Trained vs. Untrained arm	6 sensions/week for 100 days Trained: 3 × 10 s MVC isometric arm flasson.
Junes & Rutherford [26]	Hernale and 11 male adulty Control vs. humatric vs. Concertric vs. Eccentric log	3 wavimm/wavik for 12 wavits Inomatric: 4 + 5 + 4 single high sometric log information at 803 MVC. Concentric: 4 + 5 single log concentric only log externion at 80% maximum load. Economic: 4 + 6 single log eccentric only log externion at 80% maximum load.
Kanohisa & Miyashita [27]	20 male adults hometric Fast (FG) vs. hometric Slow (SG)	Same isometric training for 3 sensions/book for il weeks. Indéniet training for 5 weisins/book for subsequent 6 weeks forentitri: 3 - 5 on maind innormatic ablum flexion at multiple ofbox anglis. 65; 29 w maximal indénietis ofbox flexion at 557°/s. 55; 13 * maximal indénietis ofbox flexion at 73°/s.
Kanshina at al. [28]	12 male adults 100% vs. 60% group	3 weixinn/week for 10 works 1008: 12 = 5s MVC single arm isometric obow extension at 1.57 rad obow angle. 605: 44 = 30 < 63 MVC single arm isometric obow extension at 1.57 rad obow angle.
Khouw & Herbert	51 university students (33 Temates & 18 mates)	3 services/week for fi weeks. 6×105 isometric abuse flexion at 140 $^{\prime}$ ofbow angle. Each

Intended rather than actual movement velocity determines velocity-specific training response

DAVID G. BEHM AND DIGBY G. SALE Department of Physical Education, McMaster University, Hamilton, Ontario L8S 4K1, Canada

Symons et al. [63]	37 old adults (19 females & 18 males) Isometric vs. Concentric vs. Eccentric training group	3 sensions/week for 12 works transetric; 3 × 10 × 5 s MVC isometric knee extension at 90° knee angle. Concentric: 3 × 10 × 5 s MVC concentric only isokinetic knee extension at 90°/s. Eccentric: 3 × 10 × 5 s MVC eccentric only isokinetic knee entension at 90°/s.	bornetric: increase in concentric torque (15.1%), bornetric torque (27.7%), eccentric torque (16.5%), peak concentric work (14.3%) and power (24.8%) and improved step test time (~7%). Concentric: Increase in concentric torque (22.1%), isometric torque (17.3%), eccentric torque (17.9%), peak concentric work (45.2%) and power (53.8%), peak concentric work (45.2%) and power (53.8%), and improved step test time (~7%). Eccentric increase in concentric torque (20%), isometric torque (25.5%), eccentric torque (26.%), peak concentric work (12.7%) and power (23.3%) and improved step test time (~5%).	Bi Si H Bi H
Tanaka at al. [64]	16 female adults Control vs. Intervention	Intervention: 3 session/ week for 4 weeks 3 × 20 × 3 × 20° isometric plantarflexion at 30% MVC.	Intervention: Increase in MVC at 01 (29.3.3) and 101 (29.3.) plantarflexion.	
Tillin & Folland [65]	19 male adults Explosive strength training (EST) vs. Maximal strength training (MST)	. 4 sensions/week for 4 works EST: 4×10 explosive isometric leg extension. MST: 4×10×3 sincernatric leg extension at 75% MVT.	EST: Increase in MVF (10.6.3), Increa at 50 ms (53.7.3), 100 ms (15.3) & 550 ms (13.5) and EMG activity (~203), MVT: Increase in MVF (20.5.5) and EMG activity (~28.5).	a
Tillen et al. [66]	9 male adults Trained vs. Untrained Log	4 sensiona/week for 4 weeks Trained Leg: 4 × 10 × 3 s single leg isometric leg extension at 25 S MVE	Trained: Increase in MVF (20.3) and EMG activity (26.3). Untrained: Increase in MVF (8.3).	

ur (15.15), orque 1) and power (~7%).		(ar i)		rophy (8 %). 6.1. entricole MVT (12 %); increase in targae at 50, 100 & 150 mi (34 %, 17 % & 18 %, respective- ly); increase BMG activity at MVT (0 ~ 50 mi, 0 ~ 500 mi & 0 ~ 150 mi (18 %, 23 %, 17 % & 28 %, respectively); non-significant importingly (2.6 %).
que (22.1%), orque &) and power	Betum & Saler (8)	16 adults (8 females and 8 males) Isometric vs. Isokinetic foot (Intra-individual comparison)	3 sasientyheek for 16 soudes hometrice 3-2 h (10 MVC) isometric ducalfection at 30° plartiar flocian angle, hokinetice 3-3 × 10 hodimetic doeu flocian at 5.23 nadju.	Isumetric: Increase in hokimetic torque (~253). Isukinetic: Increase in hokimetic torque (~25%).
(~7%). # (10%), rque (26%),	Simuch et al. [10]	16 female amateur soccer players Control ys, Esperimental	Experimental: Once per week IST he 6 weeks. 1 × 3 s maximal isometric leg extension at multiple knew angles.	Experimental: Increase in CMJ height (2.24%) and kicking distance (E.8%).
our (23.3%) 29.3%) and	Bogdania et.al.[11]	15 male university students 85° vs. 145° knoe angle	3 services tends for 6 sureks 85 ^ 5 - 5 - 7 3 x MVC incometric log provis at 85 ° knier angle 145 ^ 5 - 7 4 3 x MVC incometric log provis at 145 ° knier angle Bisth groups performed countermovement jumps during rest interval.	85") Increased in maximal isometric force (13.4%) and vertical jump height (8.1%). 145": Increased vertical jump height (7.4%).
d SDrm. S) and EMG	Burgess et al. [12]	13 male adults Phyamatric vs. hannatric	2–3 servism-Jweek for 6 weeks Phytometric: 3–4 × 15–20 one-legged straight lag drop jump. Isometric: 3–4 × 1 a 15–20 one-legged explosive isometric plantar Review.	Physmatric: Increase in tendon stiffners (20.4%), jump height (58.6%) and RFD (18.9%). Instructic: Increase tendon stiffness (61.6%) and RFD (16.7%). Non-significant increase in jump height (64.3%).
MG activity	Chui [13]	96 male university studients Control vs. lumetric vs.	3 sessions/week for 9 weeks All groups performed the following 6 exercises: 2-hand military press, still-leg deadlift, 2-hand curl, squat, supine	Significant increase in strength for elbow flosion & extension, shoulder vertical & horizontal flution, hip & knee extension, trank flosion &
MG activity		Rapid Contraction vs. Slow Contraction	press & sit up. homotric: 3×6s mid-range normatric contraction at 10 MM load. Rapid Contraction: 3×10 rapid dynamic contractions at 10 RM. Sour Contraction: 3×10 sine dynamic contraction at 10 RM.	externion, in all training groups. Significant improvements in speed of movement with and without excitations for press, carl, supine press, stoff-leg deadlift, squatt and sit up in all

e mass (3.91).

gular velocities

force at 4 knew angles extension (17.9%).

hop distance (4.8%).

vehicity (13.2-45.5%)

whenity (5.2-23.9%)

pr force (5.6-8.8%) and lipping varians crimps pue at 3 knew angles

it in level walking time

screase in solimetic peak torque (22.6%); or musicle thickness (9.0-13.5.5); increase

mental, increase in strength (17.3%);

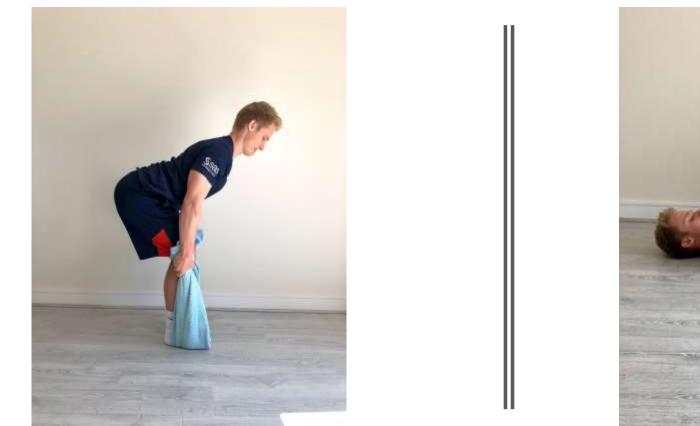
préficant increase in jump beight (2.3%). icrosov in MVT/23.52 increase in former at (12%): increase EMG activity at MVT & ms (33% & 18%, respectively); increase

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rophy (8%).

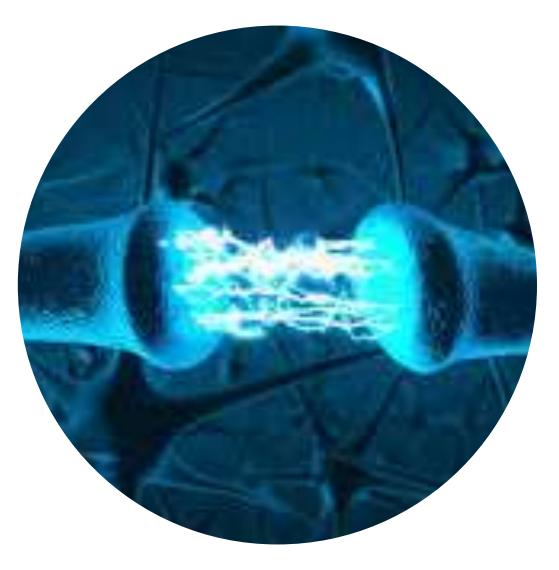
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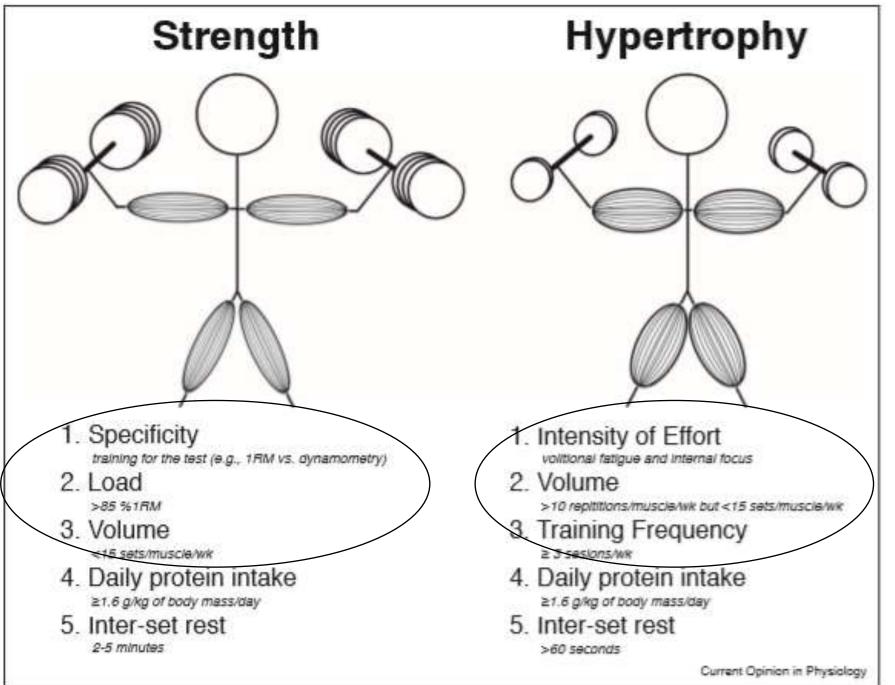




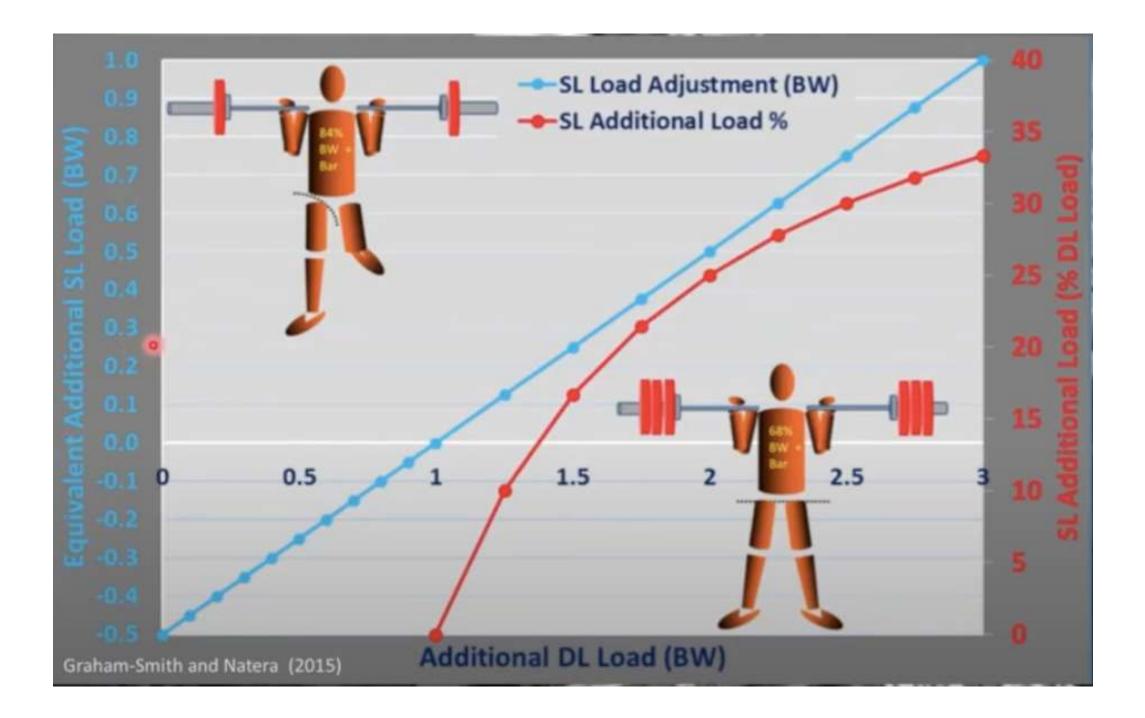
Towel Isometrics



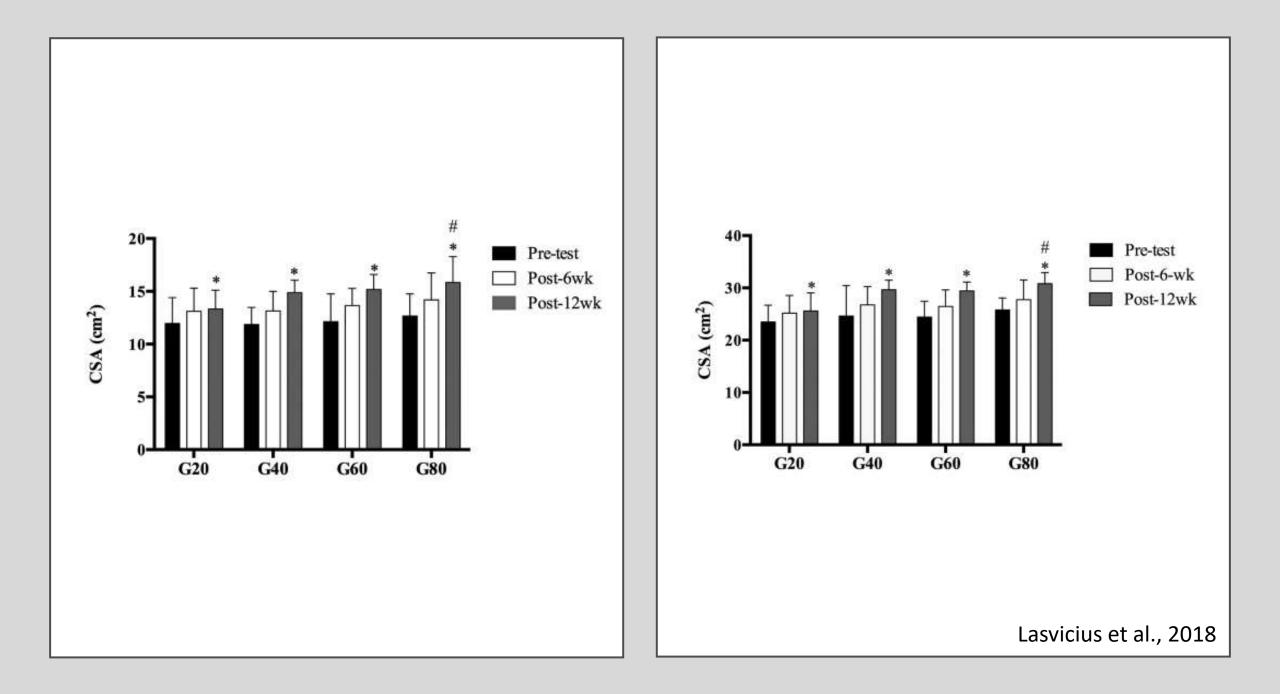




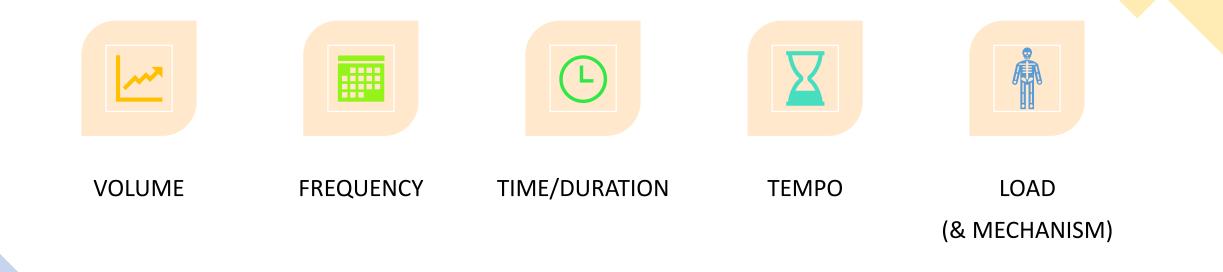
Morten et al., 2019



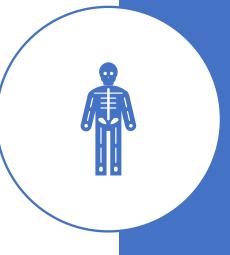
															the state	Contraction of the second s
ullrich et al. 6	and 27 m	vi. Dynamic vs.	Save Ullrich at al. (6	8]		et 40% (20%) & 6 lexion peak powe 25.4%). Dynamic: Increase et 40% (26.7%), 6	50% (20.3 er at 40% w in knew 50% (21.2	extension peak power %) & 80 % (19.4 %) of	Kubo et.al. [35]	9 male adults Short muscle length (ST) vs. Long muscle length (LT) training log (Intra-individual comparison)	4 session/week/ ST: 6×15s 50%- knee floxion, LT: 6×15s 50%- knee floxion,	70 K MVC in	ametric knew ande	ension at 50 ° 40°-1 LT: In mains at 100° 40°-	80° losee angle crease in MVC	it trained angle (49%) and cand ENG activity (~3-8%), at trained angle (44%) and les, EMG activity (~7-10%) ().
						persiver at 401% (28	5 %) & 80 % use is less 8.1 %) & 60		Kubo at al. [36]	34 male adots Control vs. Training	Training: 4 usualo 10+15+70X MV	C isometric		tendi (=3- phas angu	on-aponeurou 8%), 5) height e during CMJ (1 lar velocity da	MVC (12:43), stiffness of (143), EMG activity (53), duration of push off (43) and decrease in knew ing CMJ (8:63)
Wei¥ vt.aL.[7	0] males)						e in itome 3 %).	tric torque at 2 know	Lor st.al. [37]	31 male ad- ³¹ Isomitis ((IT) vs. Isok	T 2 cardina basil (for B taxobs		1 444 14		estimation (193), ular velocitien mans (3.1%), vice at 4 knost angles furnion (36.3%),
weir et al. [2	************************************				-		e in isome (45).	tric torque at 2 knee		0240						ular velocities mass (3.9%). proc at 4 lenes angles
Houng et al. [7	log vs. Rhy contractio (Intra-indi	contraction (ST) ythmic on (RT) log ividual			Ca	143	\$\$.	per week), and per week).	Loe & McGil	12 male M athletes						extension (17.9%), star velocities op distance (4.8%), aducity (13.2-45.5%)
Znladz et al. [7	7 male ad underwar training)			er			5	sad. sometric: 3 × 10 × 6 s isometric Arnor right with 50–100 % 100M load. somismicroweek for 3 weeks	[38] externion at 60° knee							r force (5.6–8.8%) and pping various crange.
		nt jump; CSA=Cru					mental E 9 rjoint S	sonaumi powerk for 3 woods sperimental: 3 × 30 × 3 s MVC isome 0° know angle. sension/week for 5 woods ingle: 3 × 15 s ofbow floreism at 90° e faltiple: 1 = 15 s ofbow floreism at 60	Row angle.	Single: In angles.			-0	3	5	ue at 3 knew angles Lin level walking time
Garfinkel & Calandii	Sumberitary female niversity students	Experimental: 3 sessions/wei 3 × 10 × 3-5 x single leg nom				_		ngles. sessions/week for 14 weeks	12 I.	angles.				and the second second		raase in solimetic peak torque (22.6%); musicle thickness (9.0-13.5%) increase
{20} Goldmann	ontrol vs. Experimental 7 healthy make adults ontrol vs. Experimental	Experimental: 4 sessions/wes 4 × 5 × 3 × isometric toe film					11 7	ntermittent: 4×10×3 s single leg is 0 % MVC. ontinuous: 4×30 single leg isome		n at isokinstis (11.3–11	e ve e		2 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			um angle. ental. Increase in strength (17.3%); efficient increase in jump height (2.3%), rease in MVT (23%); increase in borque at
et al. [22]	9 formale adulta with hunddar and nack garles, ndurance vs. Strength	3 unsimm/wink for 12 week Endurance: 4×2 min 90° isor corresponded to 20-30% ma Strength: 10 = 5 x 90° isometi- contraction.					females 3	0 % MVC. sensions/week for 12 weeks home ometric knee extension at 90° knee oncentric: 3 = 10 < 5 s MVC concent	rangle.	Continue CSA (10 bernetric bernetric v (16.5.51)	The part	1	and the second			(123); increase DNG activity at MVT & ns (3335 & 1835, respectively); increase phy (833). rease MVT (1235); increase in torque at & 150ms (3425, 173 & 1635, respective- nae DNG activity at MVT, 0–50ms, n & 0–550ms (1835, 3237, 173 & 2435).
likai 8, Fultunaga (25)	male adults rained vs. Untrained arm	6 sessions/week for 100 days Trained: 3 × 10 s MVC isometr			-	int	ing a Ei	vtamion at 90%. comtric: 3 × 10 × 5 x MVC eccentric i atemion at 90%.	and the second	(20.8 %) / Concentr isometric		-	52	and the second		wity); non-significant hypertingfry (2.6%). c: Increase in hokinetic torque (~35%). c: Increase in hokinetic torque (~25%).
	female and 11 male data control vi, humatric vi,	3 session/week for 12 week homatric: 4×6×4s single log to Concentric: 4×6 single log to	ametric log estension at 80% MVC. noestric only log extension at	muscle CSA (4.8.%). Concertois: Increase in isometric force (15.4%)						(17.9%), (51.8%) and improved step	tiest time (~7%).	Simon	comparison) 16 lemale amateur sciccer	Experimental: Once per week IST her6		Experimental: Increase in CMJ height (2.24%) and
	antra vi, nometre vi, ancentric vi, Eccentric ng	80% maximum load. Eccentric: 4 + 6 single log ecce		and muscle CSA (5.713). Eccentric: Increase in termetric force (10.83) and						fountric Increase in concer isometric torque (25.5%), et	ccentric tongue (26%),	at al. [10]	players Control vs. Esperimental	1 × 3 s maximal isometric leg extension angles.		kizking distance (8.8%).
Niyashita	0 male adults constrix Fast (FG) vs. constrix Slow (SG)	maximum load. Same isometric training for 5 lookinetic training for 5 session (sometric: 3×5 s maximal ison ofbow angles.	urasions/wook for it weeks. ns/wook for subsequent 6 weeks netric ofbour flexion at multiple	muscle CSA (3.53). formatile: Increased hormstrik: strength at 4 joint angles (27-353), power at 4 intensity levels (34-4634), and arm cincumference (1.833). FG: Increase in power while Hting Sight loads	Tanaka	16 female adults		stervention: 3 sessions/ week for 4		peak concentric work (12.7 and improved step test time intervention: Increase in M	(-6%),	Bingdards et al. [13]	15 male university students 85° vs. 145° knie angle	3 severims (meak for 6 weeks 85°: 5-7×3 x MVC isometric lag provis 145°: 5-7×3 x MVC isometric lag provi 86th groups performed countermover interval.	s at 145° know angle	85% Increased in maximal isometric force (13.4%) and vertical jump height (8.1%). 145% Increased vertical jump height (7.4%).
	2 male adults	FG: 29 × maximal nokinatic of SG: 13 × maximal isokinatic of 3 unsiture/week for 10 weeks	boex flexions at 73*/s	(9.4-15.5.%). SC: Increase in power while lifting heaviest load (13.1.%). 100%: Increase in muscle volume (12.4%).	et al. [64] Tillin & Folland	Control vs. Interver 19 male adults Explosive strength technice (EST) or 10	4 E	× 20 × 3 x 20* isometric plantarfices sessions/week for 4 weeks 51: 4 × 10 explosive isometric leg as 67: 4 × 10 explosive isometric leg as	tension.	10° (291) plantarfiniton. EST: Intrease in MVF (10.6 (53.7 %), 100ms (15.%) & 5 activity (-20%)		Burgess iet al. [12]	13 male adults Physmatric vs. hometric	2–3 sewiom, week for 6 weeks Phytometric: 3–4×15–20 one-legged st toometric: 3–4×1 s 15–20 one-legged plantar floxion.		Plysmatric: increase in tendon stiffness (20.4 %), jamp height (58.6 %) and RFD (18.9 %). teamstric: increase tendon stiffness (61.6 %) and RFD (16.7 %). Non-significant increase in jump height (64.3 %).
at al. [28]	00% vv. 60% graup	1.57 rad ofbow angle.	isometric elbow extension at arm isometric elbow extension	Easticle angle (16%), isometric tangue (53.2%) and concentric & eccumtric tangue (14-40%). 60%: Increase in muscle volume (5.3%), fascicle angle (15%), isometric tangue (60.2%) and concentric & eccentric tangue (19-40%).	[65]	training (EST) vs. N strongth training (1	(MST)	IST: 4 × 10 × 3 s internetific log attern	um 41 73 % MV1.	activity (~203). MVT. Increase in MVF (20.) (~283). Trained: Increase in MVF (2	0.055.0.11.110.12.0008	Chui [13]	96 male university students Control vs. Isometric vs. Rapid Contraction vs. Slow	3 setsions/week for 9 weeks All groups performed the following 6 e miktary press, sti8-leg deadlift, 2-hand press & sit up.	d curl, squat, supine	height (64.3 %). Significant increase in strength for obew flexion & otherwion, shoulder vertical & horizontal flexion, bip & knee externion, strenk flexion & otherwion, in all training groups.
Khouw & Herbert	1 university students (33 emales & 18 males)	3 wissions/week for fi weeks fi = 10s isometric elbase flexio	n at 140° ofbow angle. Each	Subjects who trained near 0.1 MVC: Increase MVC (~5.3%)	Tilkn et al. [66]	9 male adults Trained ys. Untrain	ned Log Tr	sensions/week for 4 weeks rained Leg: 4×10×3 s single leg iso 5 5 MVE	metric leg extension				Contraction	hormtrix: 3×6s mid-range normtric con Rapid Contraction: 3×10 rapid dynamic Slow Contraction: 3×10 slow dynamic	contractions at 10 RM.	Significant improvements in speed of movement with and without resistance for press, curl, supine press, stiff-leg deadlift, squat and sit up in all



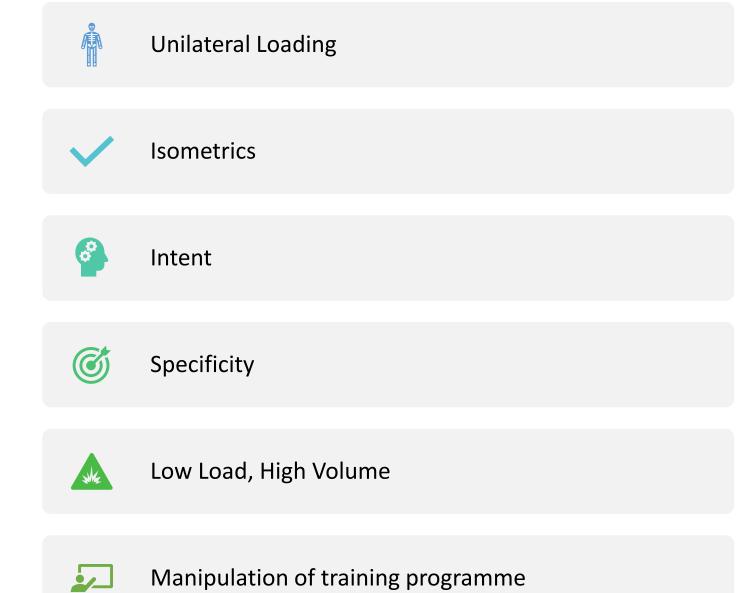
Elevator Isometrics Myo Reps







Recap



Worst Case Scenario

	Vo ₂ peak (L.min ⁻¹)	pVo ₂ peak (watts)	Vo ₂ at LT (L.min ⁻¹)	LT % Vo ₂ peak	Vo ₂ at 330 watts (L.min ⁻¹)	p2mM (watts)	p4mM (watts)
(Pre OG)	6.76	546	5.34	79	4.95	399	441
(Post IA)	6.19	435	5.26	81	5.26	290	343
(Post 8)	6.42	501	4.98	77	4.98	375	408
(Post 20)	6.46	552	4.82	79	4.82	385	452

at 330 watts is a measure of oxygen economy, p2mM -power at 2mM IBLaI, p4mM -power at 4 mM IBLaI. Pre OG is the test point before the Olympic Games. Post IA is the test point after 8 weeks of inactivity. Post 8 is the test point after 8 weeks of retraining. Post 20 is the test point after 20 weeks of retraining.

Table 1: Physiologic data across time.



Q&A

Thank you!!



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