Length Tension Motor Pool Training by Andrew Darqui www.adarq.org

I had this huge blog written but i'm going to keep this ridiculously simple.

If your goal is elite performance, you need to stimulate the highest threshold motor units of your prime movers on a daily basis, in fact possibly multiple times per day. Why do we allow our highest threshold MU's to lay dormant for days until our next max effort session? Training at a very high velocity, daily, is dangerous, so tapping into the fastest MU's using high velocity + high frequency training has far more risks than benefits, which include physiological, neural, and psychological fatigue. So what is the solution? To stimulate as much MU's as possible, every day, using submax intensity + "fatiguing work". This means, operating at 60-80% of 1RM and performing reps non stop, tempo doesn't matter, absolutely no rest in between, until failure or very close to it. This method becomes much safer than high frequency 90+% lifting, as it is far less draining neurologically, and is in fact very much restorative due to blood flow/temporary hypoxic environment. Thus, tapping into these MU's daily, or multiple times daily, using less fatiguing and in fact restorative methods, encourages growth of the entire motor pool, improves motor learning which builds connections which access these highest threshold MU's, aids in recovery, results in a significant amount of post-activation-potentiation (PAP/STIM), and should improve strength in regards to motor learning of the specific movements (such as improving strength at half squat depth).

So what does this mean? It means we can train at a relatively high intensity, using a submax RE method, which allows us to train more per week, month, and year than we ever thought possible. The amount of sessions we can handle per day, or week, depend on our progression & development of our work capacity. People accustomed to high frequency training can get away with multiple sessions per day. People who have no experience in high frequency training would need to stay strictly within the 1x/day limit for safety reasons. Regardless, progression of this ideology of training results in endless capability for growth. The percentages used per LTMP-VOLUME session can vary, as long as the tempo, no-rest, velocity, and "failure" guidelines are adhered to. This allows us to take advantage of what is considered the most powerful form of motor learning: randomized learning aka contextual interference (as opposed to block learning). Keep in mind these sessions are supplementary, they should not result in one "changing their program" to account for the LTMP-VOLUME sessions. The LTMP-VOLUME sessions are to be non fatiguing and in fact restorative, so they have no bearing on your actual "program".

So we covered the motor pool aspect, but what about the "length tension" relationship. This is where we kill two birds with one stone, if that even makes sense. Part of the motor learning aspect of this training, involves improving the resting length of our muscles/fascia prior to each LTMP-VOLUME session (well, the stretching part is considered the beginning of the ltmp-VOLUME session). Each LTMP-VOLUME session starts with mobility work of some sort, which can include but is not limited to: static stretching, pnf stretching, dynamic stretching/mobility/warmup, etc. Regardless of the method chosen, the idea is to "improve resting length" of key muscle groups. For lower body, this includes calfs, quads, hip flexors, hamstrings, glutes, adductors, and lats. So, prior to hitting our restorative squat, we would spend 15-30 minutes stretching to improve resting-length. Improving resting length WITHOUT improving the tension relationship is a problem, so, if we simply stretch without reinforcing the "tension relationship", we have a major problem. This is where we kill two birds with one stone. We lengthen, then utilize these muscle groups under tension in their slightly improved length. This will hopefully allow us to improve flexibility rather quickly while maintaining proper tonus in these muscle groups, for example, jello legs no longer exist from a long bout of static stretching, they in fact feel "loose" and ridiculously "springy", the active tonus is there, they are ready to fire.

So, putting it together, we lengthen, warmup using this "temporary" lengthened position, then perform a high rep submax fatiguing resistance exercise using these muscle groups, which if done using a high frequency approach, will result in very quick motor learning, recovery, stim, and thus more power.

An example LTMP-VOLUME session might look like this:

Stretching of various muscle groups: 15-30 minutes
Half squat: Warmup 30% x 10, 60-80% x F.
Done.

Something I'm thinking will work really good also will be this, have been doing it since tonight and it feels even better because of the interval sprints:

Stretching of various muscle groups: 15-30 minutes
Light interval sprints: Build up intensity over 10-20 sprints, do not exceed 70% effort
Half squat: Warmup 30% x 10, 60-80% x F.

Edited in, 03/19/2011: Another idea that might work, would be to hit a variety of exercises in the same manner, for example:

Stretching of various muscle groups: 15-30 minutes (upper AND lower)
Light interval sprints: Build up intensity over 10-20 sprints, do not exceed 70% effort
Half squat: Warmup 30% x 10, 60-80% x F.
Calf raises: Warmup 30% x 10, 60-80% x F.
Pullups: Warmup x ?, Work set x F
Pushups/dips: Warmup x ?, Work set x F

Edited in, 03/25/2011: Some other stuff:

Light completely stiff leg ankle hops: 4-5 x 25-50
RDL: Warmup 30% x 10, 60-80% x F.
Pullups: Warmup x ?, Work set x F
Calve Raises: Warmup 30% x 10, 60-80% x F

A good idea could be to alternate "knee bend exercises" (a-chain dominant: front/back/half squat/pin squat etc) with "stiff leg exercises" (p-chain dominant: 45 deg hyper, rdl, rev hyper, and let's include GHR), one could do this every other day, or rotating through the sessions throughout the day.

This method can most likely be used for more than squat, of course, but my guinea pig status stops at squat. One could do 3-4 squat sessions per day in this manner, or do a different lift per session. With all the talk of "neural charge", this is beyond a neural charge.

As far as injuries are concerned, I actually feel better following these LTMP-VOLUME sessions. My knees and all muscle groups become lighter and feel stronger/more explosive throughout the day. I've been utilizing this for nearly 2 weeks now and I don't know when I'm going to stop, because I can simply back off on the intensity per LTMP-VOLUME session to 60% and achieve failure on those, achieving basically the same effect.

So to summarize, why are we not stimulating the highest threshold MU's in the prime movers specific to our goals on a daily basis, or in fact, multiple times per day? If we can do so, job/school/life situations withstanding, then the potential for growth is endless. The potential for power, strength, hypertrophy, and PAP/STIM adaptations are enormous.

Here's my sessions over the last week or so, and my legs have never felt better. They in fact feel the best using the higher rep sessions and that is what i'm sticking with:

- 03/08/2011: 3 sessions of pin 6 squat: 225 x 5 {6pm, 7pm, 10pm}, one heavy half squat session also
- 03/09/2011: 4 sessions of pin 6 squat {3:30pm=225x5, 5:30pm=225x5, 2am=245x5, 4am=225x5}
- 03/10/2011: 2 sessions of pin 6 squat {11pm=225x10, 12:30am=225x10}, 2 heavy half squat sessions also
- 03/11/2011: 3 sessions of pin 6 squat {6pm=225x10, 9pm=225x10, 1am=225x10}
- 03/12/2011: 3 sessions of pin 6 squat {6pm=245x5, 9pm=245x5, 1:40am=245x5}
- 03/13/2011: 1 session of pin 6 squat {10am=225x5}, dunking, heavy squat session at night
- 03/14/2011: 3 sessions of pin 6 squat {7:30pm=135x10,225x5,275x5,295x1,315x1, pullups=10},
{11:30pm=135x8,225x5,275x5,295x1,315x1, pullups=8, prone-reverse-hyper=100}, {3am=prone-reverse-hyper BW@5x50,

135x8,225x5,275x5,295x1,315x1, pullups=10}
- 03/15/2011: 4 sessions of pin 6 squat {6pm=225x5, 2am=225x10, 3:30am=225x10, 5am=225x10}
- 03/16/2011: 2 sessions of pin6 squat {9pm=135x8,225x15, 12am=135x8,225x15}
- 03/17/2011: 3 sessions of pin 6 squats {9pm=135x8,245x10 2:30am=135x8,245x10 5am=135x8,245x12}
- 03/18/2011: 3 sessions of pin 6 squats {7pm=interval sprint + 265 x 10, 9pm=interval sprint + 265 x 8 3:30am=interval sprint + 265x10}

Again, keep in mind this is experimental, if you try it, start out with just 1 session per day and 60-70% of 1RM for at least a week or so, see how you feel, and make sure you get the stretching in, that is apart of this ideology. As always, listen to your body and back off when needed.

Make sure you keep your ego in check and keep it safe, this is supplementary to your normal routine which gives you all the more excuse to stay lighter and not push your limits per session. Pushing your limits comes through the frequency + STIM effect of this style of training.

peace

Ok so, we have LTMP-VOLUME (other blog post) and now LTMP-SINGLES. Keeping this real short, basically, instead of hitting a warmup with 30% and then just getting right into a 60-80% lift x Failure, this session has you doing a work up of singles after the 30% warmup, for example:

Light stretching, ~15 min
Light interval sprints: 10x
Half squat: 30% x 10, 60% x 1, 70% x 1, 80% x 1, 85% x 1, 90% x 1, 95% x 1

etc...

You can use MSEM clusters in there also, so working up to an MSEM 1 x 2-4 @ 90-95% on singles, ~30-60s rest between reps.

The reason for LTMP-SINGLES now, is, need a very low volume high intensity type of session, because at times during this LTMP training, the body feels amazing and is giving you PR-level force production so, sometimes you'll want to try and take advantage of it. Also, these sessions are very low volume, nice to switch it up sometimes to give the body a break from volume, which can be tiring to people who aren't used to it.

Figuring out when to use LTMP-SINGLES and LTMP-VOLUME is up to you, i'd spend most of my time with the volume sessions, but when you're feeling really good, taking advantage of your new strength can be fun so hit up some singles and get after it.

If you were to use LTMP seven days a week, i'd use singles ~2d/week and volume ~5d/week. Rotating through different exercises for the LTMP-VOLUME session can keep you from feeling stale, ie rotating through half squat, rdl, pin squat, ghr, etc. For LTMP-SINGLES sessions, you'll want to use only the big exercises, squat, half squat, deadlift, pin squat, etc, no need doing singles with calve raises/ghr etc.

short blog, but we're building a framework, updated the LTMP-VOLUME blog a little bit.

As always though, listen to your body and use good judgement with these methods if you plan to utilize them.

peAce!

Ok I'm going to try and keep this very short.

I'm tired of looking like a human and performing like one. For some reason, 20+ rep squatting makes me feel like an alien. My legs grow very fast, my legs feel amazing the day after (as if i'm floating), and I just get strong as hell/powerful very

quickly. Some people might be saying to themselves "But 20 reps is endurance and that is slow twitch". What? No. Performing 20 reps on squat completely taps out the fast twitch motor pool. The time under tension is great enough to cause considerable hypertrophy in the quads, glutes, hamstrings and core. With hypertrophy comes strength, and with that time under tension with a heavy bar on your back comes the ability to man handle heavier barbells much easier. There's nothing "slow twitch" about it, sure there's an element of endurance, but when you perform 20 reps with say, your 12RM, due to recovery breathes after 12 reps, it becomes more like a cluster of max effort (due to fatigue) singles while retaining the bar on your back. That is so far from slow twitch i'm laughing while typing this.

NOTE: Getting *VERY* strong and being able to move *HEAVY* weight *VERY FAST* is one of our main missions as athletes. For example, the faster you can move 2x your bodyweight in squat, the better. So it's not only about 2x, it's how fast you can move it. MEBM is a tool for rapidly accrued strength/mass gains.

Anyway, what is MEBM? It's a mindset i've gotten into lately which has helped me to achieve some serious strength gains. It's also a play on words using MSEM (Maximal Strength Effort Method ***Cluster 2x3-4 15-60s rest/rep 4-6 min rest/set***) by Verkhoshansky. Has it hurt my vert? No. Has it made me feel slow? No. MEBM is to be used *in addition or in it's own session* to ratio (msem, & various strength training protocols).

How does it work? Very simple. To use it in addition to whatever training ideology/method you are on, just add heavy 20 rep squats as a finisher after squatting. Sessions may then look like:

example session: ... squat 5 x 5, MEBM squat 1 x 20 ...
example session: ... MSEM squat 2 x 4, MEBM squat 1 x 20 ...
example session: ... ramped up squat 1 x 5, squat 3 x 10, MEBM squat 1 x 20 ...
example session: ... squat 4 x 3, MEBM squat 1 x 20 ...

It can also be used in sessions by itself, in a few different ways:

example session: ... MEBM squat 3 x 20 ...
example session: ... MEBM squat 1 x 20 (max effort 20 very heavy with 10RM or less) ...

Ok so that's it really. The idea is to get in a MEBM finisher after pretty much whatever you're doing, really pushing yourself until (or close to) your legs feel like they are going to collapse. We want to exhaust nearly every fiber and send a message to the body: **GROW NOW OR DIE A SAD AND PATHETIC DEATH**

How do I choose the load to use for MEBM squats? Just start off really light initially unless you have alot of experience with long heavy time under tension, because the soreness can get pretty extreme if you rush it. So, for noobs & the like, start off with 50% of 1RM for example. Humble yourself a bit, that'll probably cause some significant soreness for most anyone not used to squatting 20 reps. After the initial break-in phase of 1-2 weeks, you can then keep track of your PR 20 rep and try to beat that when you feel very good. True 20 rep PR's should happen with somewhere around 70+% of your 1RM. Other than that, depending on how you feel after the prior work (MSEM, 5x5, 3x10, etc), just go based off feel and push yourself to the limit.

Do I have to stop at 20 reps? Nope, if you thought 20 reps at X weight would be completely exhausting, and it isn't, hit a few more (5 or so, to total 25). I wouldn't exceed 30 reps total as that will bring you more into that strength-endurance realm with much lighter weights.

What kind of squat style can I use with MEBM? Deep or half, doesn't matter. Either one is going to murder your legs. I personally squat using a half stance (slightly above parallel) and my quads, glutes, and hamstrings grow fine. My glutes probably have packed on the most mass given my high rep half squatting, believe it or not, but overall leg size has improved

also. Regardless, glutes, quads, and hamstrings will grow with DEEP *OR* HALF squat MEBM. If you squat deep always, and want to give yourself an excuse to try half squatting, well here it is.

Won't I get slow doing MEBM squats? No.

Why won't I get slow doing MEBM squats? Do sprinters get slow running 100's, 200's or 400? An MEBM squat is like an all out sprint of 100, 200, or 400m, depending on the load on the bar. Each one of those races has a speed endurance component and considerable lactic acid buildup, more-so for the 200 & especially 400. Fatiguing the fast twitch motor pool and then trying to continue on for a short duration is what you get in those sprints, and it's also what you get with an MEBM squat.

What should I focus on while doing MEBM squats?

Well, if you feel crappy, just focus on achieving the 20 reps. If you feel good however, focus on bar speed. The more you focus on bar speed, the better. Even after you are starting to get tired around 10-12 reps, each rep after that might require a breathe (or 2-3 breathes), after you're done breathing, focus on bar speed.

What strategy do you use while doing MEBM squats?

Well, if i'm trying to hit 20 with my TRUE 10RM, I'm going to want to hit around 8 reps straight, 3 or so deep breathes, then hit 3-4 reps, then keep repeating that breathing + rep process until I have 20. Astonishingly, once you get to 15 reps, you know you have 20, it's just a matter of grit & guts. If you can hit 15, you can hit 20, bottom line.

If I'm hitting 20 with less than my true 10RM, i'll usually hit 10-12 reps in a row fast, 3 or so deep breathes, then max out my next batch of reps (3-4), etc, continuing until I get 20.

If i'm capable of hitting 20 straight with high bar speed, then I'll go for it right off the bat. Those are actually very tough since lactic acid removal is diminished by lack of recovery breathing, so once you get to 20 reps you're pretty much tapped out.

How do you feel after MEBM squatting? I personally feel great directly after. My legs feel warm from increased blood flow, and I feel spent. The next day, when I wake up, my legs feel extremely light and warm, with no soreness since i'm adapted to high volume. So I just feel great overall, better than with any other set/rep scheme for sure, I can promise you that. You however, may feel pretty crappy the first 2 weeks until you get accustomed, but so do people who run 100's, 200's, or 400's max effort for the first time. Same thing. Once you're adapted, you'll feel amazing.

WHAT IS THE JELLO SET????????? The jello set is repping out half squat to failure (20 or so reps) then immediately changing stance to much closer (less than shoulder width, feet straight ahead) and transitioning directly into CONTROLLED quarter squats repped out until failure. Glutes and hamstrings die on the half squat, then quads die on the quarters.

Why would I do that? It's pretty fun & every muscle gets toasted completely.

Can I let my form go to sh*t to complete the reps? No. Form must be kept good for safety reasons, if you can't perform a rep with good form after recovery breaths, it's time to stop the set.

Can MEBM be applied to other lifts? It's pretty hard to apply MEBM to upper body lifts unless you use pins, the lower body just has much larger muscle groups all contributing to one movement, it also recovers faster while breathing in between reps. If anything, It could be applied to heavy barbell lunges/BSS. If you were to try and apply some of this high rep heavy lifting to upper, you would need a rack and to lift off pins, for example, max effort pin bench trying to hit 20 reps, pausing on pins very briefly to recover past 10 reps until you hit 20. The same could be done for pin rows, single arm db rows resting on ground, etc.

I didn't read all of the above, so what's the take home message? I don't feel like reading all of that.

KEEP IMPROVING YOUR 20 REP SQUAT BY USING IT AS A FINISHER, THE

GROWTH & POTENTIAL IS LIMITLESS

For anyone who gets into high rep squatting, if you take video, post it whenver you take one ;d

peace

GO. GET. IT.