パワートレーニング：
アンチエイジングとQOL向上の鍵

JOSH HENKIN, CSCS

THANK YOU!!!

サンドバッグの人?!!!

-ジムのオーナーとして10年以上

-軍隊やプロアスリートの指導も行ってきたが、クライアントの大半は一般成人＆ポストリハビリ

-NSCA, NASM, Perform Better, DCAC, AFPA, CSCCA, NSCA-TSACなどのカンファレンスにおけるプレゼンター

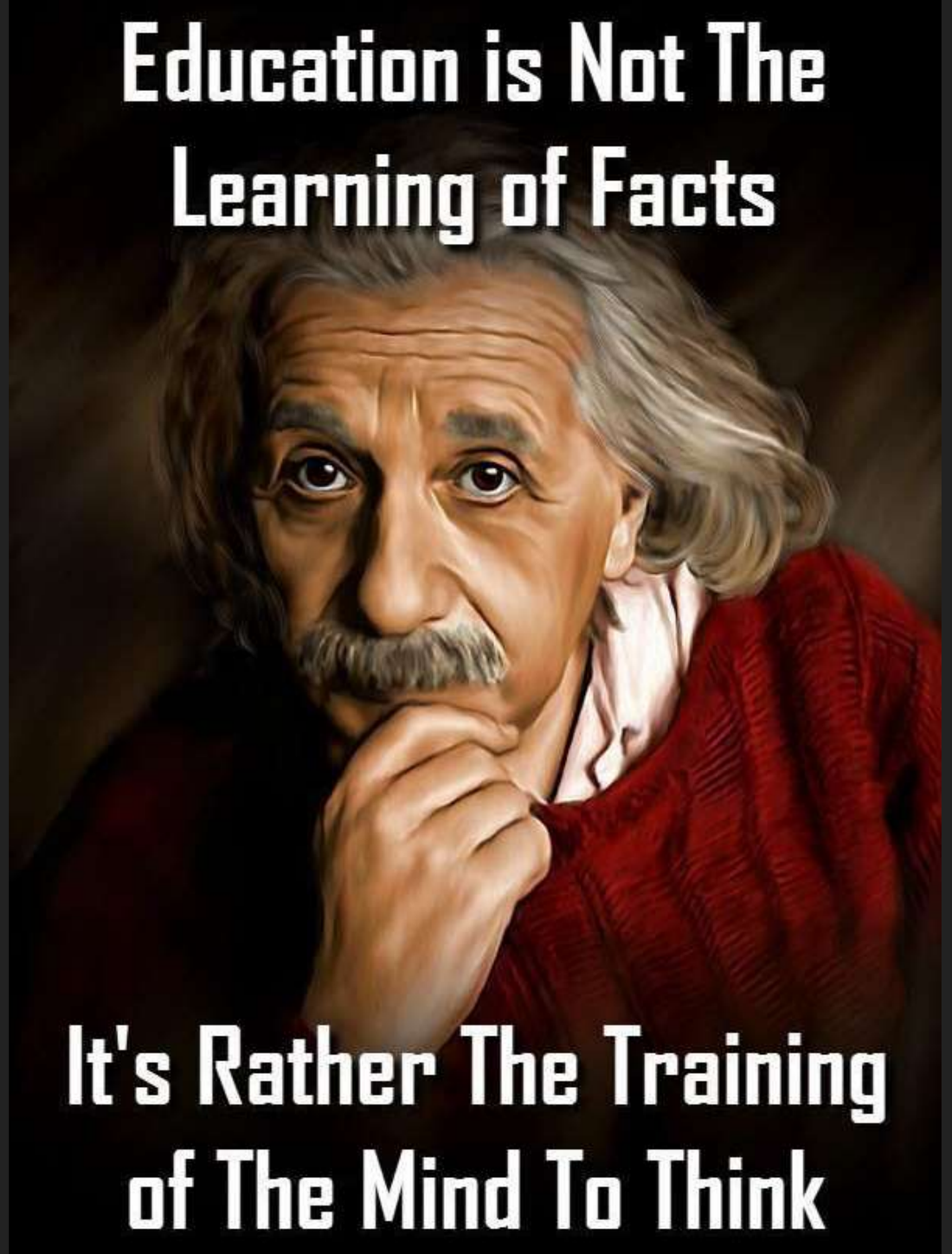
-Equinox, EXOS, アメリカ軍のコンサルタント

-Men’s Health, Shape, The Wall Street Journal, などを含む12以上の出版物に執筆

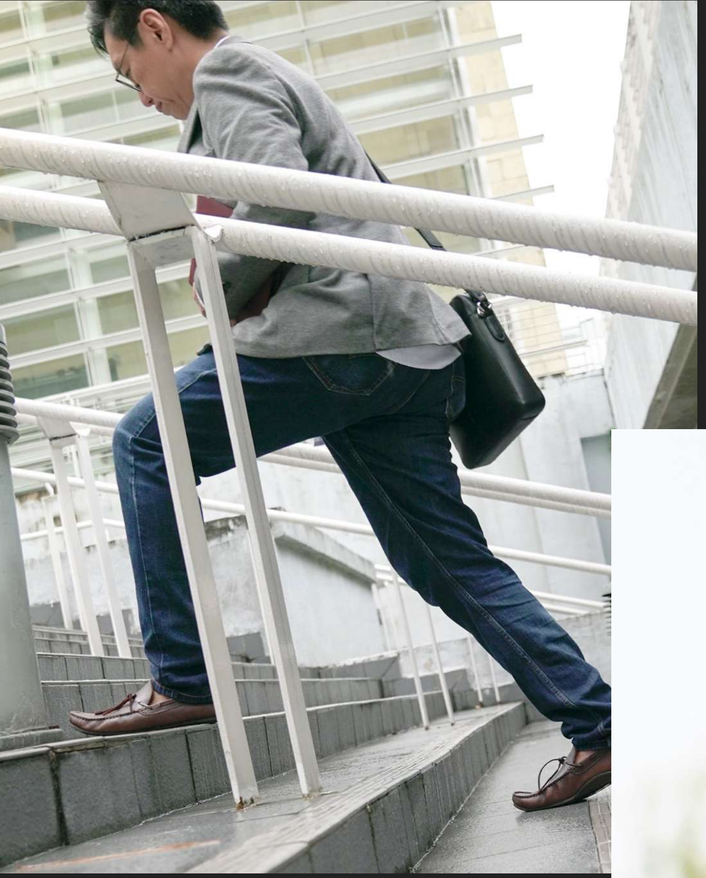
-世界各国 13 カ国以上におけるプレゼンテーション

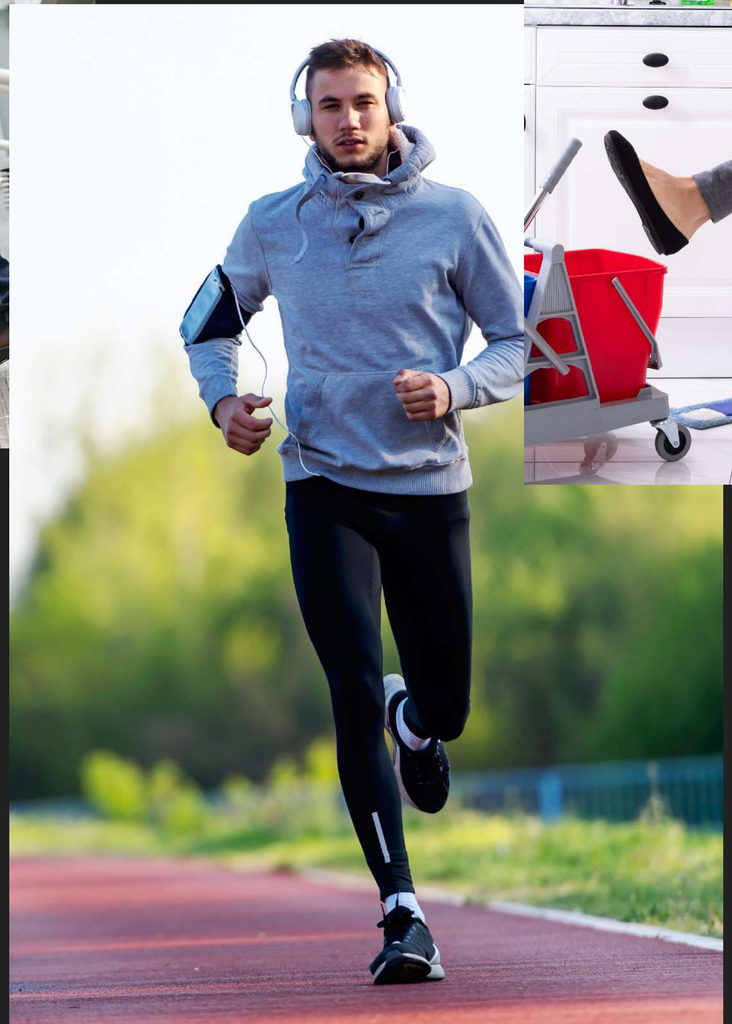
教育とは事実を学ぶことではなく

考えるためのマインドのトレーニングである



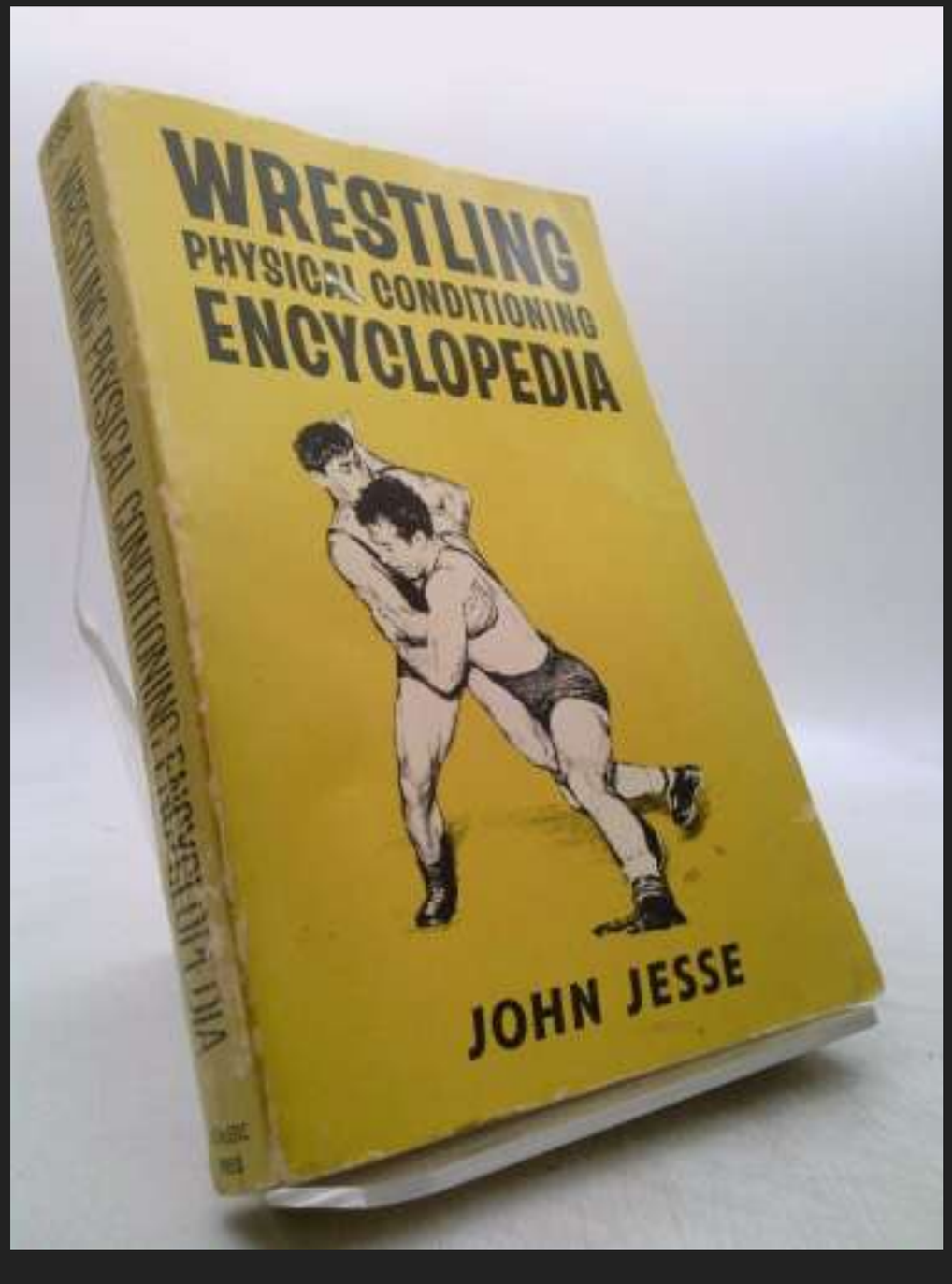

I SAW IT ON THE INTERNET
インターネットで見たんだから
真実に違いない
IT MUST BE TRUE





あなたのクライアントはアスリートではない！

「負荷を伴う漸進的レジスタンストレーニングの概念を受け入れるにあたり、英語圏、特にアメリカ、カナダのコーチング専門家達は、文化的問題に直面した。機械が多くの仕事を担う文化においてスポーツに参画する若者たちの大部分は、鉱山、農場、森林、船着場などにおける肉体労働のバックグラウンドを持っていなかった。豊かさ、都市化、機械化が進むにつれて、子供達はゴールを達成するための大変な努力と辛抱強さの哲学を失っていた。」

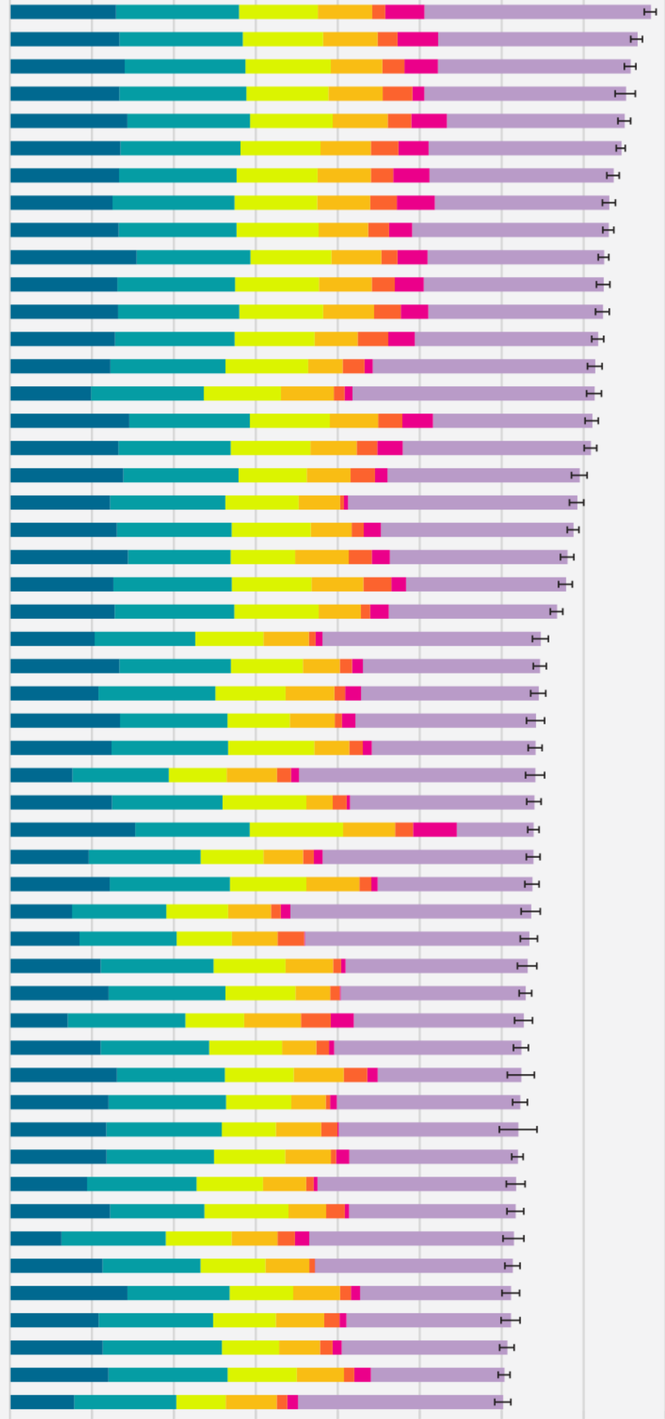


Kevin Hart Explains Why He Ended Up in a Wheelchair After a Friendly Foot Race With Former NFL Player

Attempting a 40-yard dash against former NFL player Stevan Ridley, the actor said he is "44 and sitting my ass down"

By **Nikki Dobrin** | Published on August 23, 2023 11:51PM EDT


AH, YES. HAPPINESS
I REMEMBER
makeameme.org


1. Finland (7.809)
2. Denmark (7.646)
3. Switzerland (7.560)
4. Iceland (7.504)
5. Norway (7.488)
6. Netherlands (7.449)
7. Sweden (7.353)
8. New Zealand (7.300)
9. Austria (7.294)
10. Luxembourg (7.238)
11. Canada (7.232)
12. Australia (7.223)
13. United Kingdom (7.165)
14. Israel (7.129)
15. Costa Rica (7.121)
16. Ireland (7.094)
17. Germany (7.076)
18. United States (6.940)
19. Czech Republic (6.911)
20. Belgium (6.864)
21. United Arab Emirates (6.791)
22. Malta (6.773)
23. France (6.664)
24. Mexico (6.465)
25. Taiwan Province of China (6.455)
26. Uruguay (6.440)
27. Saudi Arabia (6.406)
28. Spain (6.401)
29. Guatemala (6.399)
30. Italy (6.387)
31. Singapore (6.377)
32. Brazil (6.376)
33. Slovenia (6.363)
34. El Salvador (6.348)
35. Kosovo (6.325)
36. Panama (6.305)
37. Slovakia (6.281)
38. Uzbekistan (6.258)
39. Chile (6.228)
40. Bahrain (6.227)
41. Lithuania (6.215)
42. Trinidad and Tobago (6.192)
43. Poland (6.186)
44. Colombia (6.163)
45. Cyprus (6.159)
46. Nicaragua (6.137)
47. Romania (6.124)
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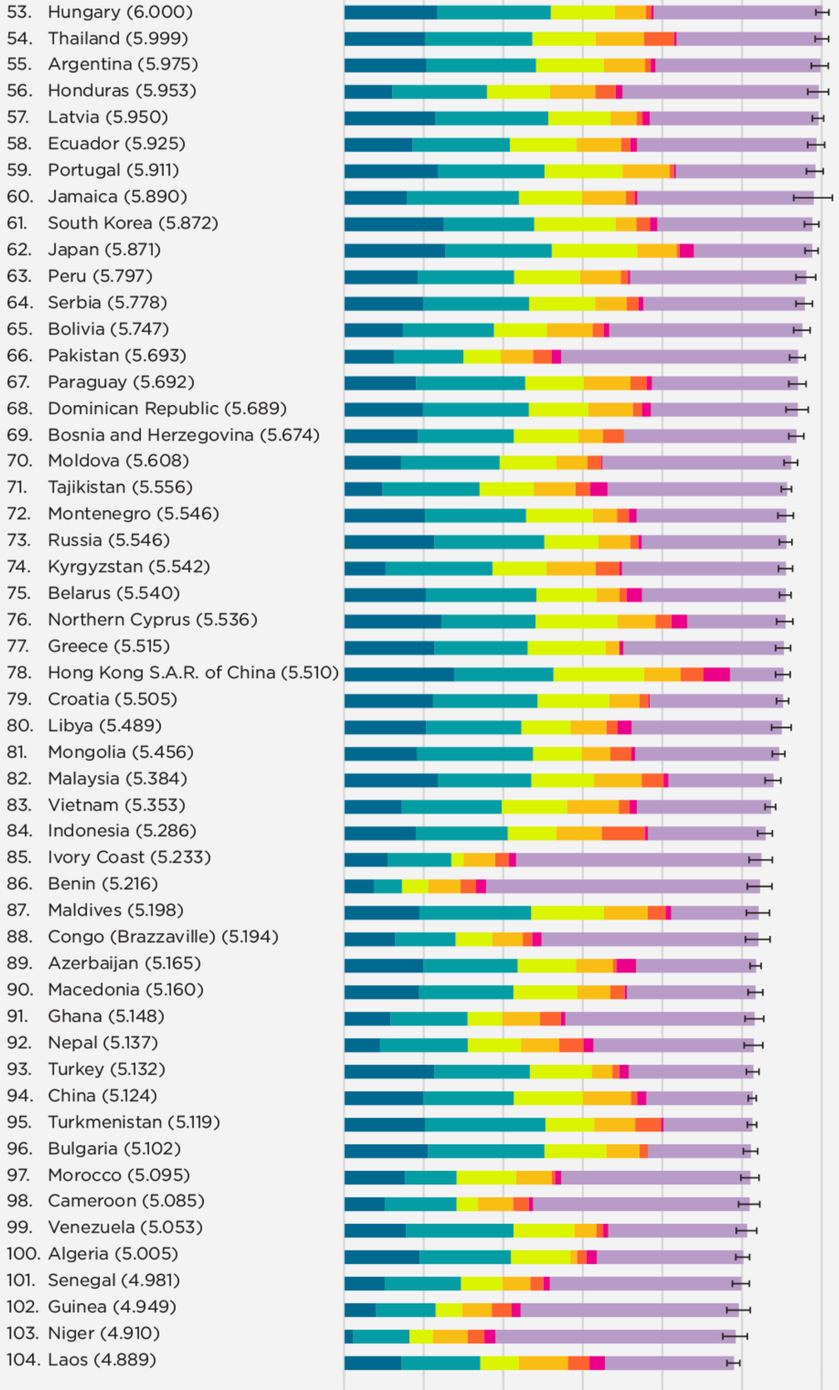
49. Mauritius (6.101)
50. Kazakhstan (6.058)
51. Estonia (6.022)
52. Philippines (6.006)


53. Hungary (6.000)
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55. Argentina (5.975)
56. Honduras (5.953)
57. Latvia (5.950)
58. Ecuador (5.925)
59. Portugal (5.911)
60. Jamaica (5.890)
61. South Korea (5.872)
62. Japan (5.871)
63. Peru (5.797)
64. Serbia (5.778)
65. Bolivia (5.747)
66. Pakistan (5.693)
67. Paraguay (5.692)
68. Dominican Republic (5.689)
69. Bosnia and Herzegovina (5.674)
70. Moldova (5.608)
71. Tajikistan (5.556)
72. Montenegro (5.546)
73. Russia (5.546)
74. Kyrgyzstan (5.542)
75. Belarus (5.540)
76. Northern Cyprus (5.536)
77. Greece (5.515)
78. Hong Kong S.A.R. of China (5.510)
79. Croatia (5.505)
80. Libya (5.489)
81. Mongolia (5.456)
82. Malaysia (5.384)
83. Vietnam (5.353)
84. Indonesia (5.286)
85. Ivory Coast (5.233)
86. Benin (5.216)
87. Maldives (5.198)
88. Congo (Brazzaville) (5.194)
89. Azerbaijan (5.165)
90. Macedonia (5.160)
91. Ghana (5.148)
92. Nepal (5.137)
93. Turkey (5.132)
94. China (5.124)
95. Turkmenistan (5.119)
96. Bulgaria (5.102)
97. Morocco (5.095)
98. Cameroon (5.085)
99. Venezuela (5.053)
100. Algeria (5.005)
101. Senegal (4.981)
102. Guinea (4.949)
103. Niger (4.910)
104. Laos (4.889)

Figure 5.1: General happiness, U.S. adults, General Social Survey, 1973-2016

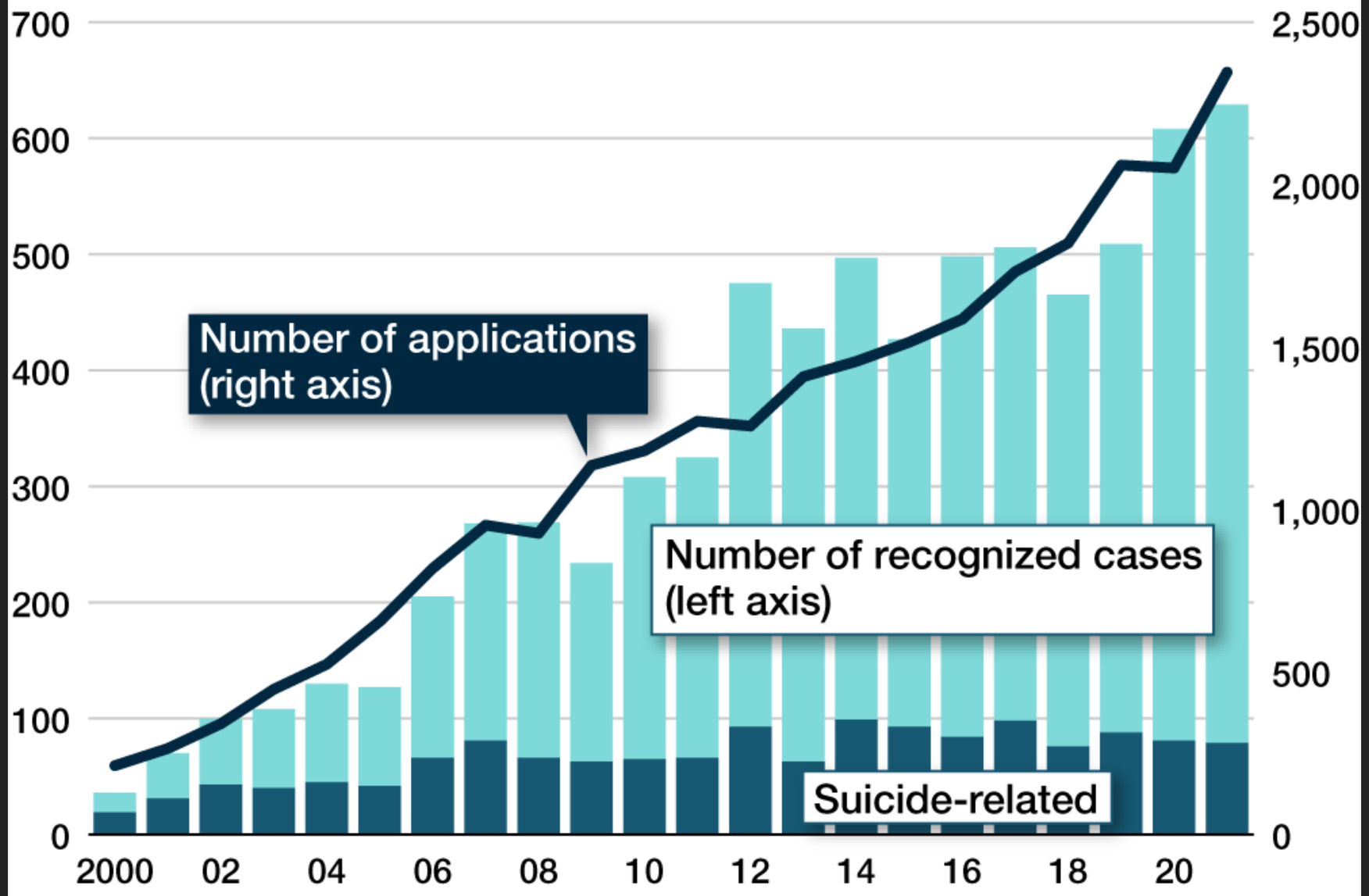
"We know that up to 80% of visits to primary care doctors are due to conditions that are caused or exacerbated by unmanaged stress," said psychiatrist Dr. Francoise Adan, director of the Connor Integrative Health Network of University Hospitals in Cleveland. "Being happy doesn't just make us feel better, it improves our health. It helps us eat healthier, be more active and sleep better."

Because happiness leads to healthier behaviors, it helps stave off high blood pressure and excess body fat, resulting in lower risk of stroke and cardiovascular disease, she said.

The connection between mental and physical health is reflected in many factors, said Dr. Laura Kubzansky, co-director of the Lee Kum Sheung Center for Health and Happiness at the Harvard T.H. Chan School of Public Health, also in Boston. Kubzansky co-authored a meta-analysis of 15 studies encompassing nearly 230,000 people that linked an optimistic mindset to lower risk of heart attack and stroke, as well as a lower risk of death. The 2019 review, published in *JAMA Network Open*, suggested promoting an optimistic mindset could be good preventive medicine.

"The evidence is increasingly strong," she said. "What we do about it will be an interesting question. Long before you get to the cardiologist, you and your primary care physician should be talking about your psychological state."

Recognized Work-Related Mental Health Disorders



Created by *Nippon.com* based on data from the Ministry of Health, Labor, and Welfare.

nippon.com

2023年に平均以上になる方法

- 瞑想をする
- ウエイトトレーニングする
- 睡眠を改善する
- 1日1万歩歩く
- 飲酒をやめる
- 怒りやすくならない
- 感情への対応方法を学ぶ
- 注目に値するゴールに取り組む
- スマホを持たず自然の中で時間を過ごす

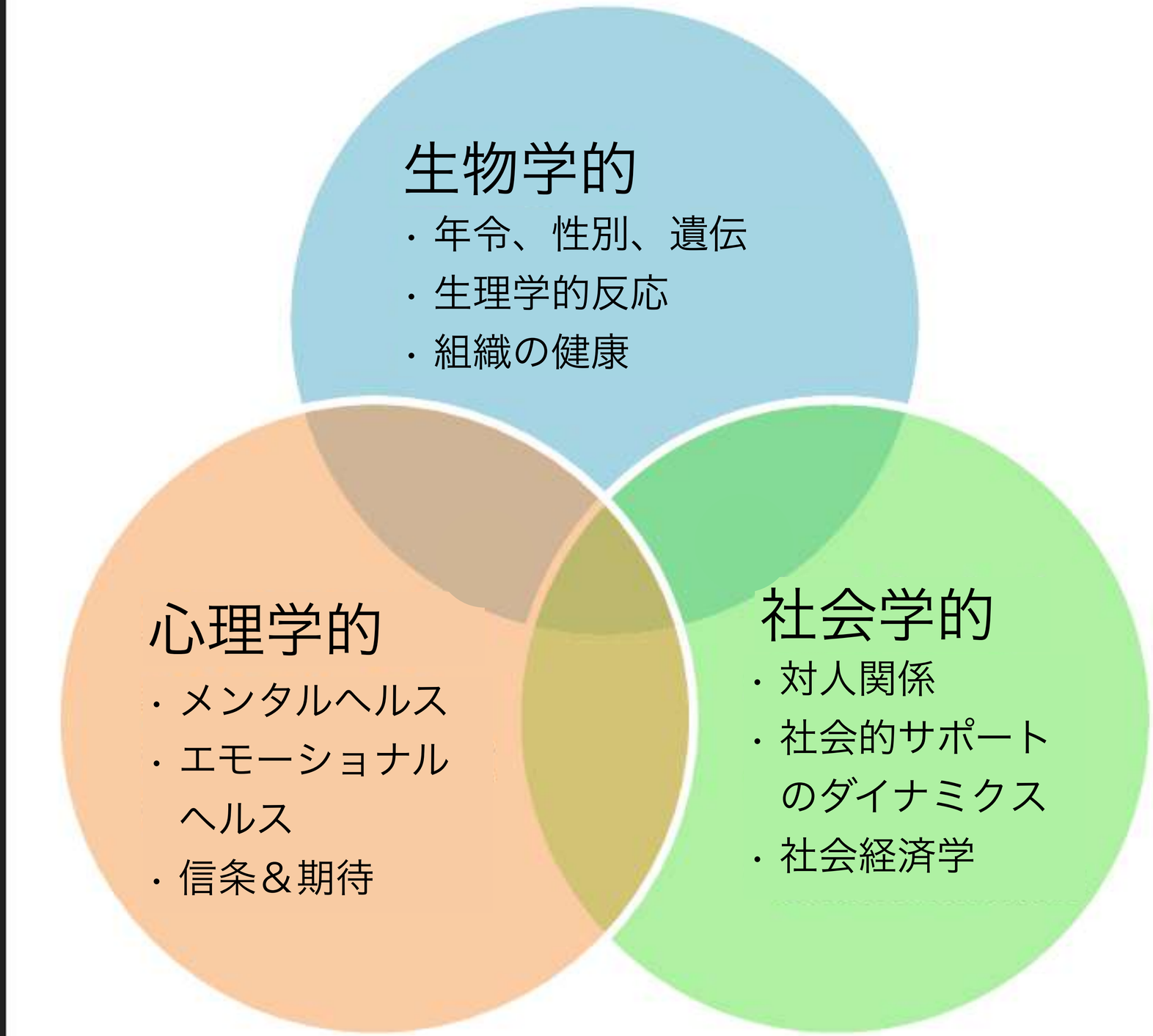
健康とは何か？

最初の質問に戻ってみよう：健康とは何か？オックスフォード英語辞書によると「Health 」は、ドイツ語に語源を持つ（12世紀以前）古英語の「hælþ」に語源を持ち、全体ということを意味する。私は医師であるために、個人的には、Woeld Health Organization の1948年宣言によって開設されている健康の定義を好んでいる。「健康とは、身体的、メンタル的、社会的に完璧にウェルビーイングな状態であり、ただ単に病気や虚弱さが存在しない状態ではない。」身体的、感情的、社会的ウェルビーイングは私達に健康の概念を与えるにおいて相互依存するものである。

アリアナはファンたちが彼女を最も健康的であると推測した時期において、彼女自身は「人生最悪のポイント」であったことを公表した。

Angela Weiss / AFP via Getty Images

「私は、自分自身が”健康的”に見えると考えていた頃、大量の抗うつ剤を服用し、飲酒し、食事もしっかりと摂れておらず、人生最低のポイントでした。実際、私は健康的ではなかった。説明する必要がないのはわかっているのですが、オープンさとある種の弱さを認める勇気を持ちたいと思って…何か良いことがそこから生まれるかもしれないから。」


生物学的
・年令、性別、遺伝
・生理学的反応
・組織の健康
心理学的
・メンタルヘルス
・エモーショナル
ヘルス
・信条＆期待
社会学的
・対人関係
・社会的サポート
のダイナミクス
・社会経済学

Review > Physiol Behav. 2020 Sep 1;223:112964. doi: 10.1016/j.physbeh.2020.112964. Epub 2020 May 29.

Adverse Childhood Experiences and Adult Obesity: A Systematic Review of Plausible Mechanisms and Meta-Analysis of Cross-Sectional Studies

David A Wiss [1], Timothy D Brewerton [2]

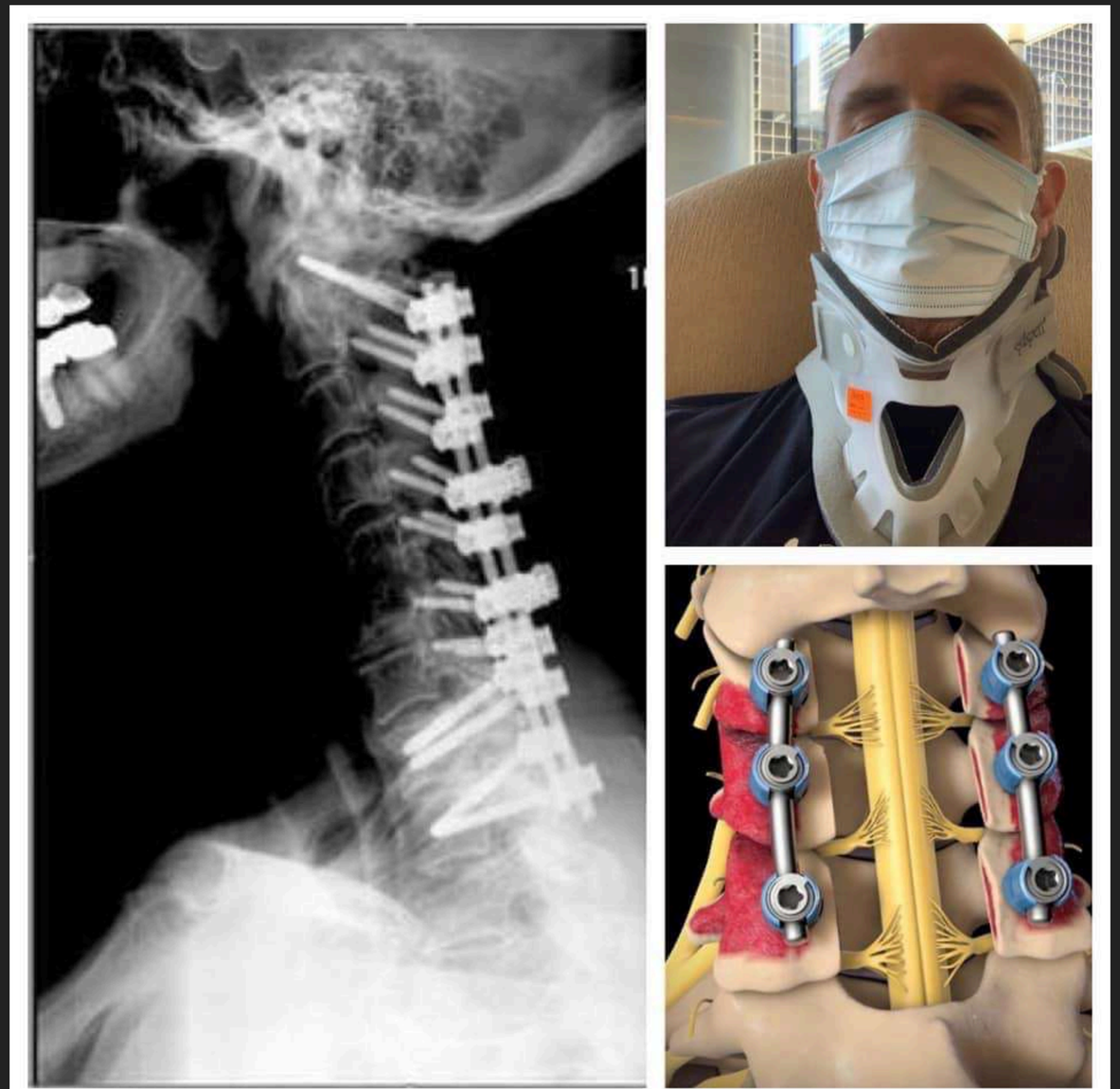
Affiliations + expand

PMID: 32479804 DOI: 10.1016/j.physbeh.2020.112964

Abstract

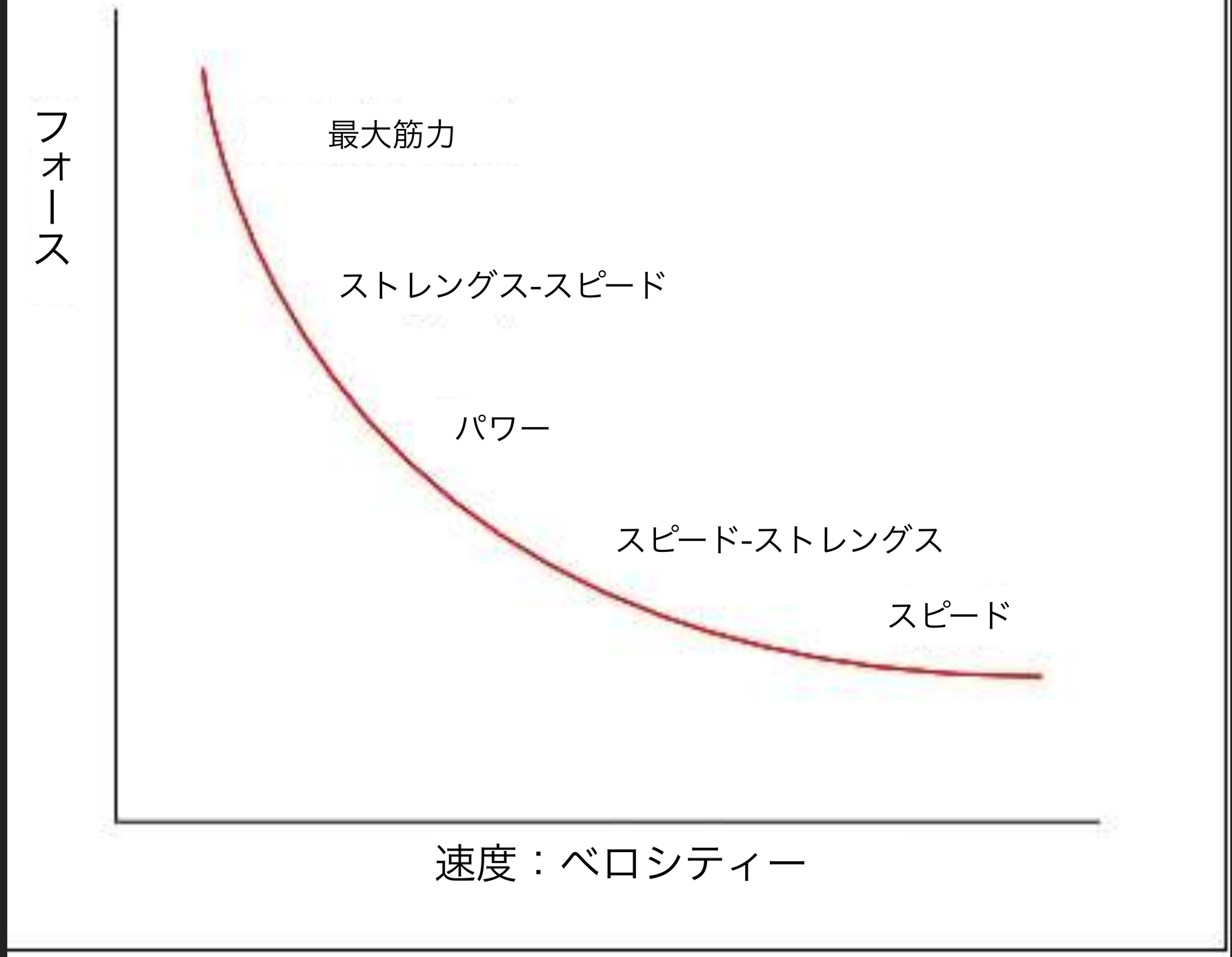
Adverse childhood experiences (ACEs) can become biologically embedded leaving a lasting signature on multiple body systems. ACE scores have been used to associate childhood adversity to a wide range of adverse health conditions over the life course, most notably substance-related disorders. Multiple studies have shown that the presence of elevated ACE scores predicts obesity in adulthood. However, a gap exists in the literature elucidating the pathways from childhood adversity to increased BMI in adulthood. We systematically reviewed these mechanisms as well as discuss novel plausible pathways. We searched PubMed, PsycInfo, Embase, and Web of Science and after applying exclusion criteria identified 18 articles for qualitative analysis. The most commonly cited mechanisms linking ACEs to obesity are social disruption, health behaviors, and chronic stress response. Ten observational studies (n=118,691) were quantitatively summarized and demonstrated a positive association between ACE and adult obesity with a pooled odds ratio of 1.46 (CI=1.28, 1.64) with moderate heterogeneity (I^2=70.8%). Our results found a 46% increase in the odds of adult obesity following exposure to multiple ACEs. Based on our qualitative synthesis and review of the most recent relevant literature, we propose biologically plausible explanations for the significant positive relationship between ACEs and adult obesity. Reducing exposure to ACEs, improved screening and detection of trauma, better access to trauma-informed care, and improvements to the food environment are likely to improve downstream health outcomes related to eating behavior.

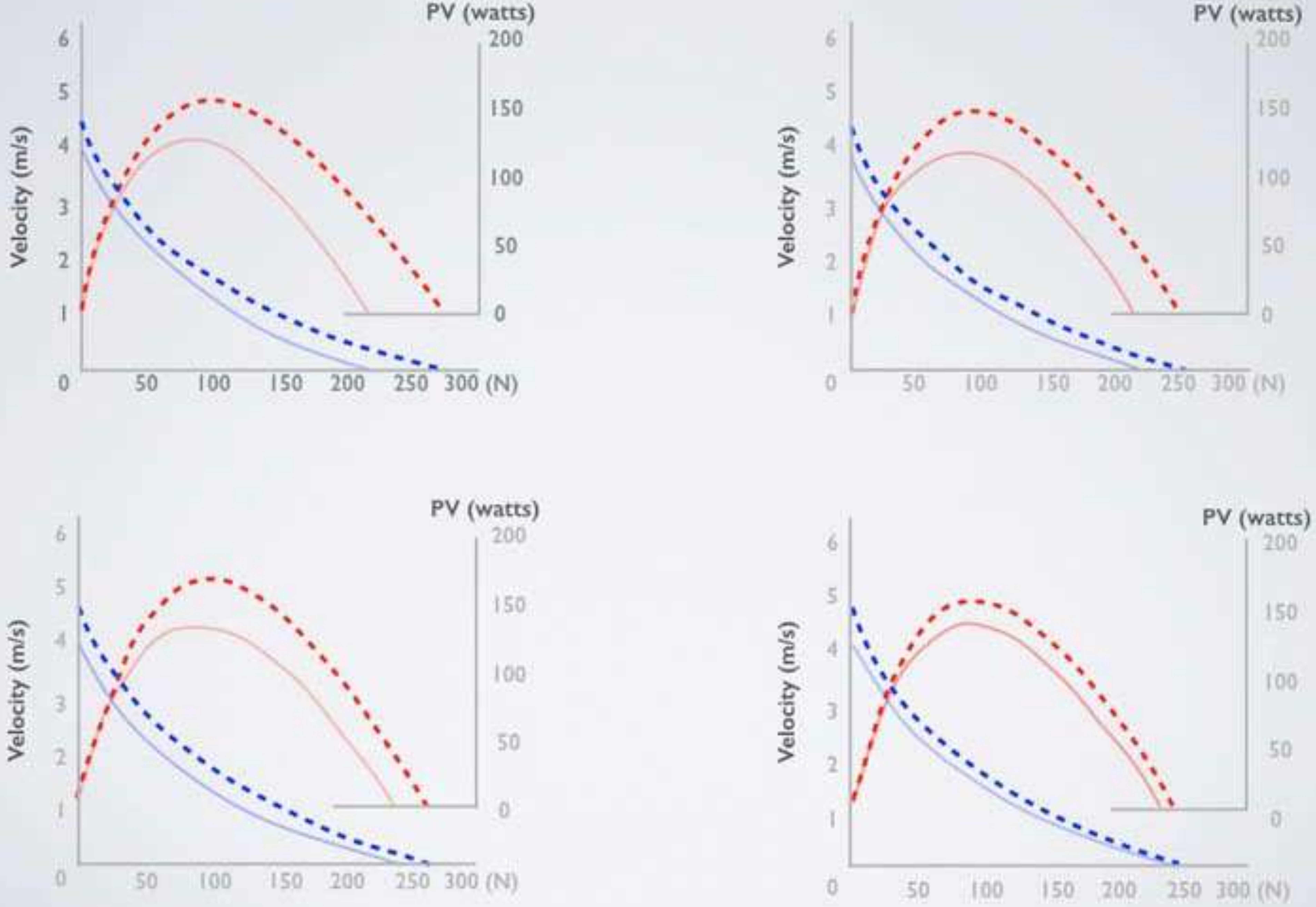
なぜこれが私にとって重要なのか？




Aspen

で、パワーって何？

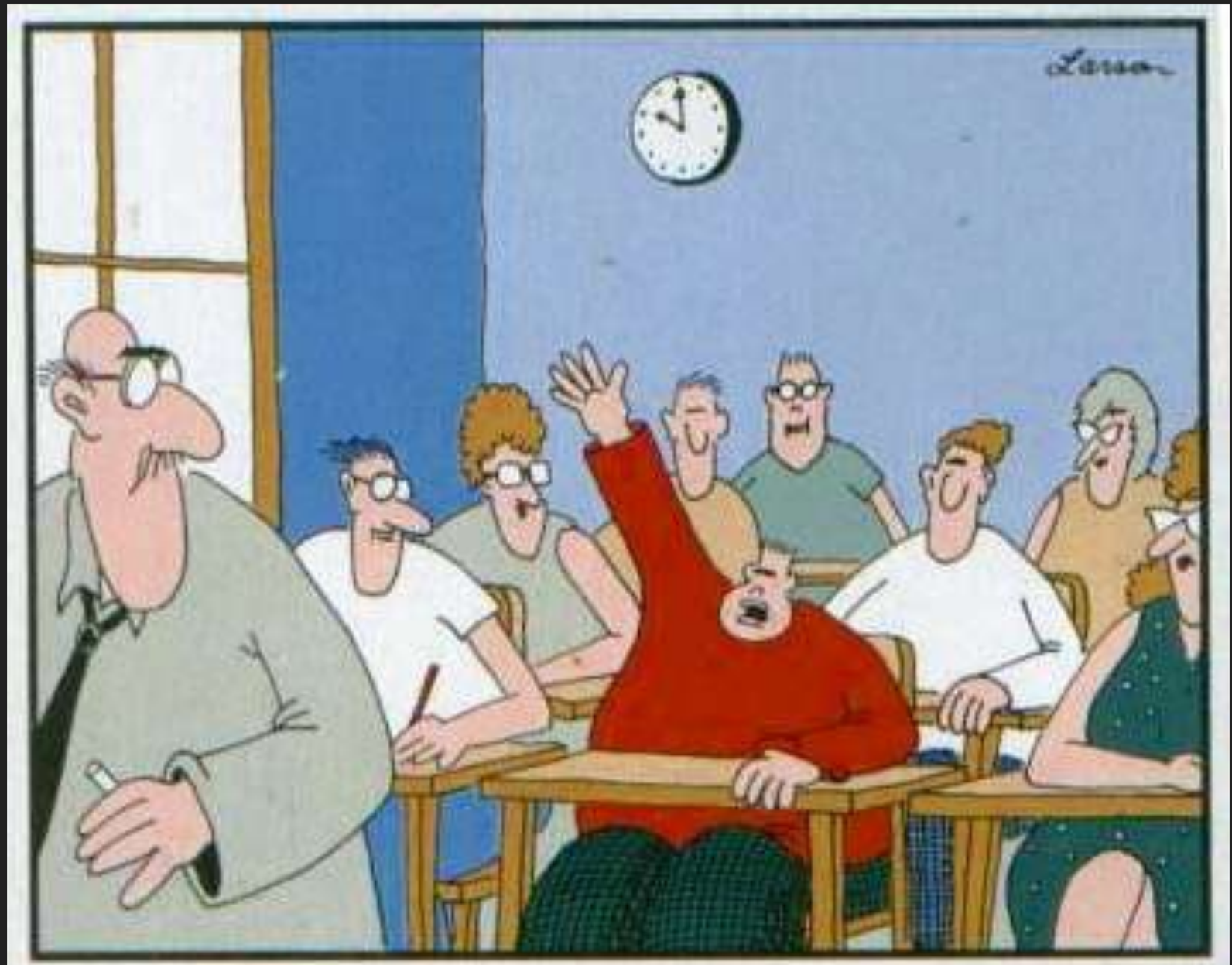

フォース
最大筋力
ストレングス-スピード
パワー
スピード-ストレングス
スピード
速度：ベロシティー



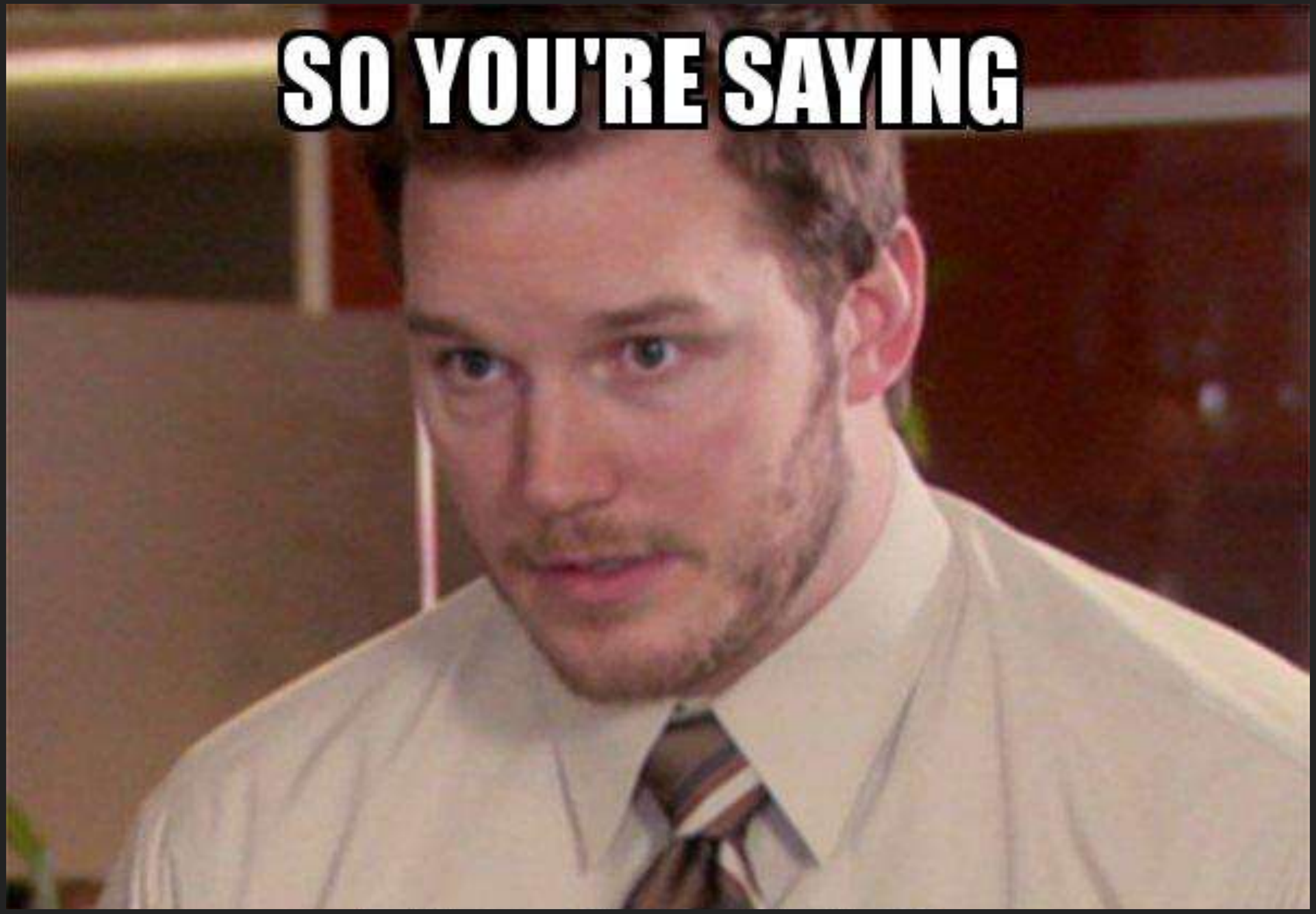
Modified from Kaneko 1983

Table 2. Countermovement vertical jumps (mean ± *SD*).*

Variable	Power lifters	Olympic lifters	Sprinters	Controls
CBW				
Peak force (N)	1,854.2 ± 49.4	2,022.9 ± 58.8	1,924.9 ± 57.2	1,741.0 ± 49.8
Peak velocity ($m \cdot s^{-1}$)	2.86 ± 0.07	3.18 ± 0.08	3.17 ± 0.08	2.68 ± 0.07
Peak power (W)	4,447.1 ± 192.0	5,377.8 ± 228.2	4,906.2 ± 222.1	3,737.7 ± 193.6
Jump height (cm)	39.7 ± 2.3	48.2 ± 2.8	49.9 ± 2.7	33.7 ± 2.3
C20				
Peak force (N)	2,036.1 ± 42.3	2,226.0 ± 50.3	2,012.9 ± 48.9	1,867.8 ± 42.7
Peak velocity ($m \cdot s^{-1}$)	2.55 ± 0.06	2.89 ± 0.07	2.83 ± 0.07	2.41 ± 0.06
Peak power (W)	4,452.4 ± 146.1	5,386.4 ± 173.7	4,809.3 ± 169.1	3,789.6 ± 147.4
Jump height (cm)	30.4 ± 1.4	35.6 ± 1.7	36.5 ± 1.7	25.8 ± 1.5
C40				
Peak force (N)	2,190.8 ± 34.0	2,357.0 ± 40.4	2,140.7 ± 39.3	1,981.4 ± 34.3
Peak velocity ($m \cdot s^{-1}$)	2.25 ± 0.05	2.48 ± 0.06	2.51 ± 0.06	2.10 ± 0.05
Peak power (W)	4,301.0 ± 144.9	5,050.0 ± 172.3	4,747.4 ± 167.6	3,631.7 ± 146.1
Jump height (cm)	22.1 ± 1.1	26.4 ± 1.3	27.3 ± 1.3	18.2 ± 1.1

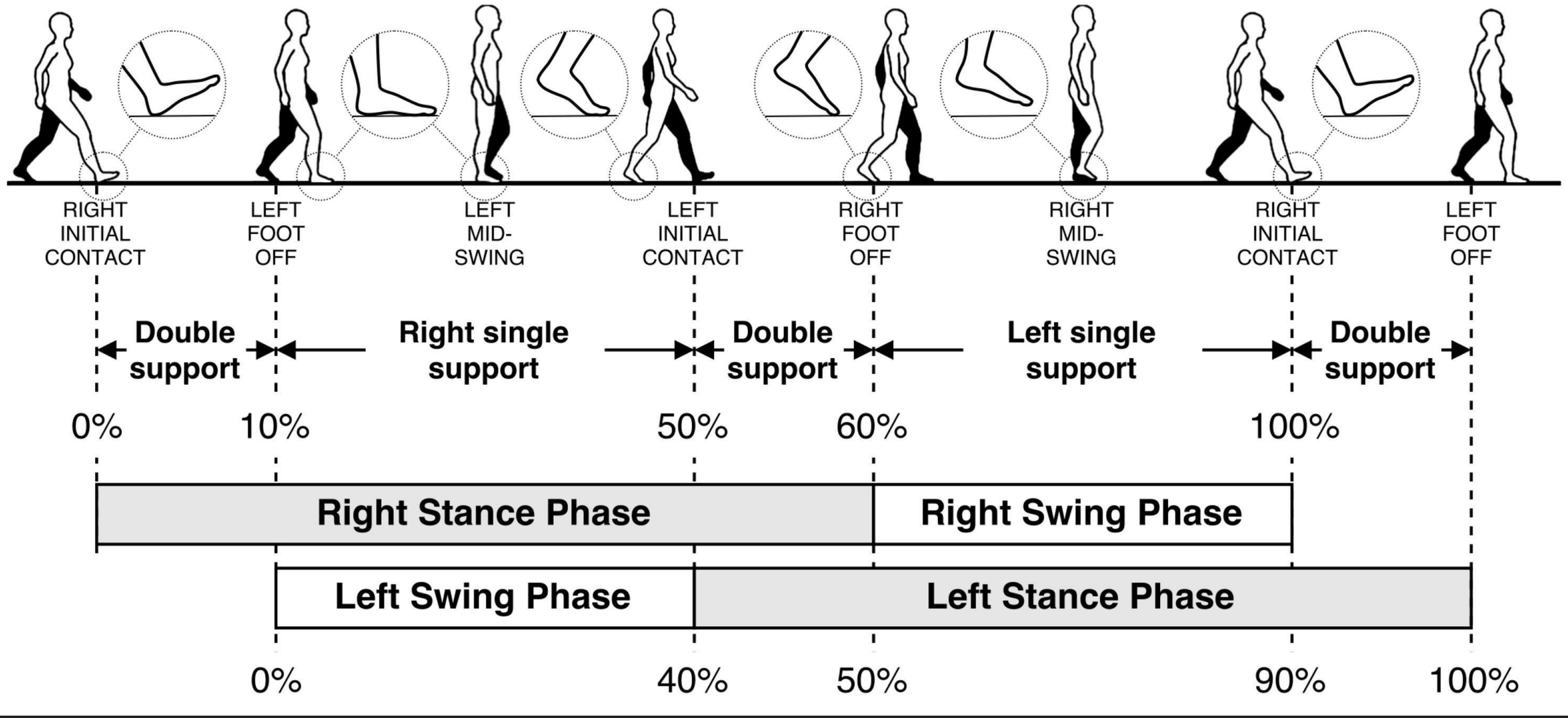


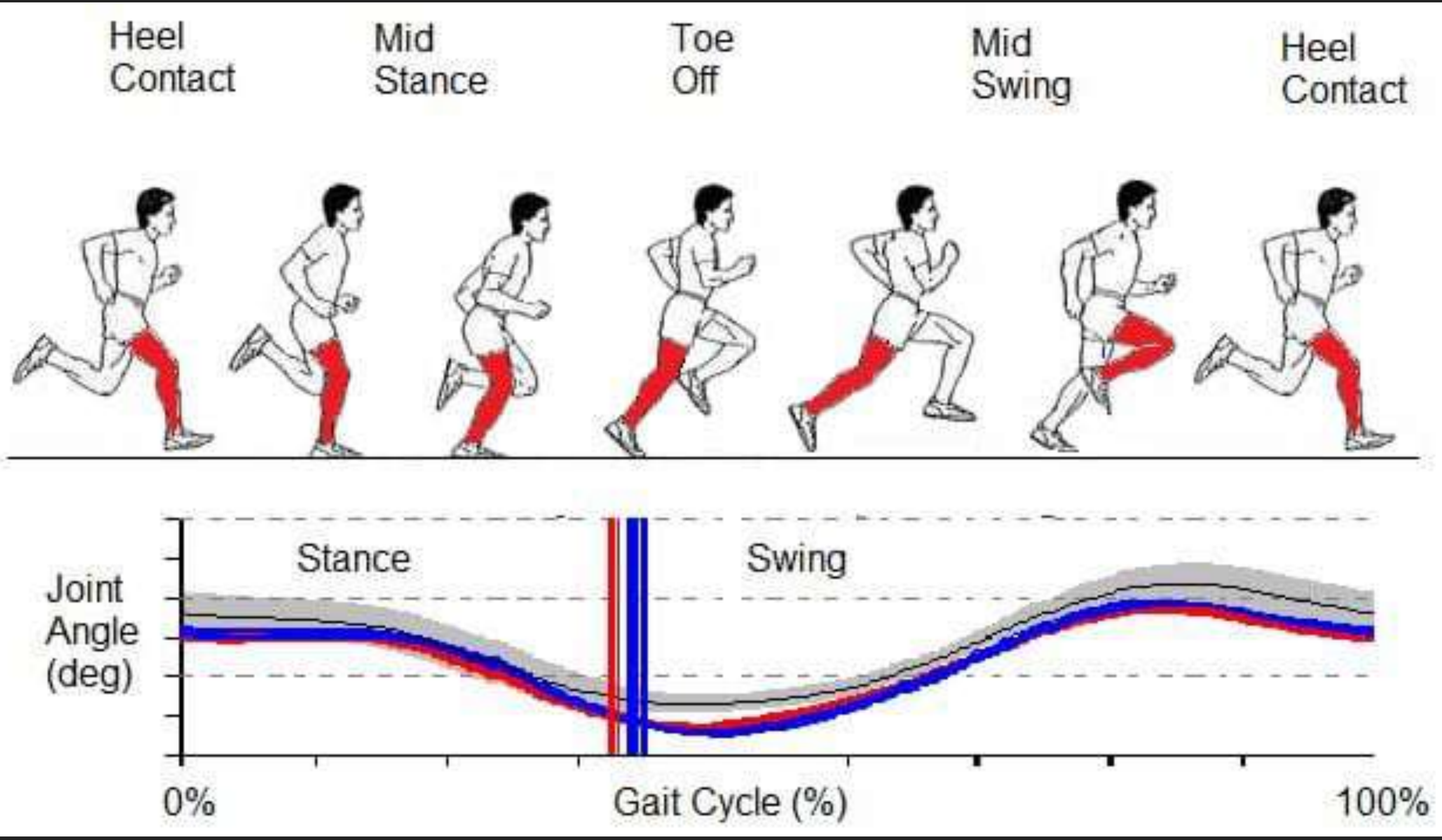
"Mr. Osborne, may I be excused?
My brain is full."


SO YOU'RE SAYING

パワートレーニングの健康利点

- パワートレーニングによって引き起こされる力学的、代謝的損傷は、身体にタンパク同化ホルモン　テストステロン、成長ホルモン、インシュリンのような成長因子のレベルを増大させるためのシグナルを与える。
- パワートレーニングは、より強く、よりレジリエントな結合組織の発達を助けることが可能：特に腱、靭帯、ファシア、関節包、これによって挫傷や損傷などの怪我のリスクを低減させる。
- パワートレーニングは高齢者の加齢プロセスの後半においても彼らのQOLの向上と機能的自立の維持を助けることが可能。
- パワーは、日々の生活における活動に大きなキャリーオーバーを持つ、力の立ち上がり率を向上させる。


RIGHT INITIAL CONTACT
LEFT FOOT OFF
LEFT MID-SWING
LEFT INITIAL CONTACT
RIGHT FOOT OFF
RIGHT MID-SWING
RIGHT INITIAL CONTACT
LEFT FOOT OFF
Double support
Right single support
Double support
Left single support
Double support
0%
10%
50%
60%
100%
Right Stance Phase
Right Swing Phase
Left Swing Phase
Left Stance Phase
0%
40%
50%
90%
100%


Heel Contact
Mid Stance
Toe Off
Mid Swing
Heel Contact
Stance
Swing
Joint Angle (deg)
0%
Gait Cycle (%)
100%

Gait & Posture
Volume 62, May 2018, Pages 303-310

Full length article

Lower extremity power training improves healthy old adults' gait biomechanics

Azusa Uematsu [a], Tibor Hortobágyi [b], Kazushi Tsuchiya [c], Norio Kadono [d, e], Hirofumi Kobayashi [f], Tomoya Ogawa [g], Shuji Suzuki [h]

STAYING HEALTHY

Power training: A complementary approach

Power training may be even more important than strength training because muscle power declines at more than twice the rate that strength does as you age—as much as 3.5% a year for power compared with 1.5% for strength. That's why some doctors, physical therapists, and personal trainers are now combining the swift moves of power training with slower, more deliberate strength training exercises, as do the workouts in this report, to reap the benefits of both activities.

Functional Benefit of Power Training for Older Adults

in Journal of Aging and Physical Activity

Click name to view affiliation

Tom Hazell, Kenji Kenno, and Jennifer Jakobi

DOI: https://doi.org/10.1123/japa.15.3.349
Keywords: strength; ADL; independence; successful aging; sarcopenia

In Print: Volume 15: Issue 3 **Page Range:** 349–359

Abstract Author Notes

Aging leads to significant losses in muscle mass, strength, and the ability to independently perform activities of daily living (ADL). Typically, standard resistance training (RT) has been used to reduce these losses in function by maintaining or even increasing muscle strength in older adults. Increasing strength does not necessarily, however, result in an increase in the ability to perform ADL. There is now research suggesting that muscle power is more closely associated with the performance of ADL than muscle strength is, so training for muscle power might lead to more beneficial results in functional performance. This review of studies investigating the effect of training on ADL performance in older adults indicated that standard RT is effective in increasing strength in older adults, but power training that contains high-velocity contractions might be a more optimal means of training older adults when the emphasis is on increasing the performance of ADL.

J Strength Cond Res. Author manuscript; available in PMC 2015 Mar 1. *Published in final edited form as:* J Strength Cond Res. 2014 Mar; 28(3): 616–621.
doi: 10.1519/JSC.0b013e3182a361b8

PMCID: PMC3902133 | NIHMSID: NIHMS512514 | PMID: 23897022

High-speed power training in older adults: A shift of the external resistance at which peak power is produced

Stephen P. Sayers, PhD and Kyle Gibson, PT, PhD

For example, tasks such as moving the lower limb quickly to stabilize the body after losing balance or from the accelerator to the brake while driving are encountered frequently in this population, but being trapped under a heavy object where maximum strength is required would be encountered rarely. Thus, a training regimen that increases peak power at lower external resistances would be an optimal training result for an older adult interested in practical functioning and maintaining safety with age.

Japan's population aged faster than any country over the last 30 years.

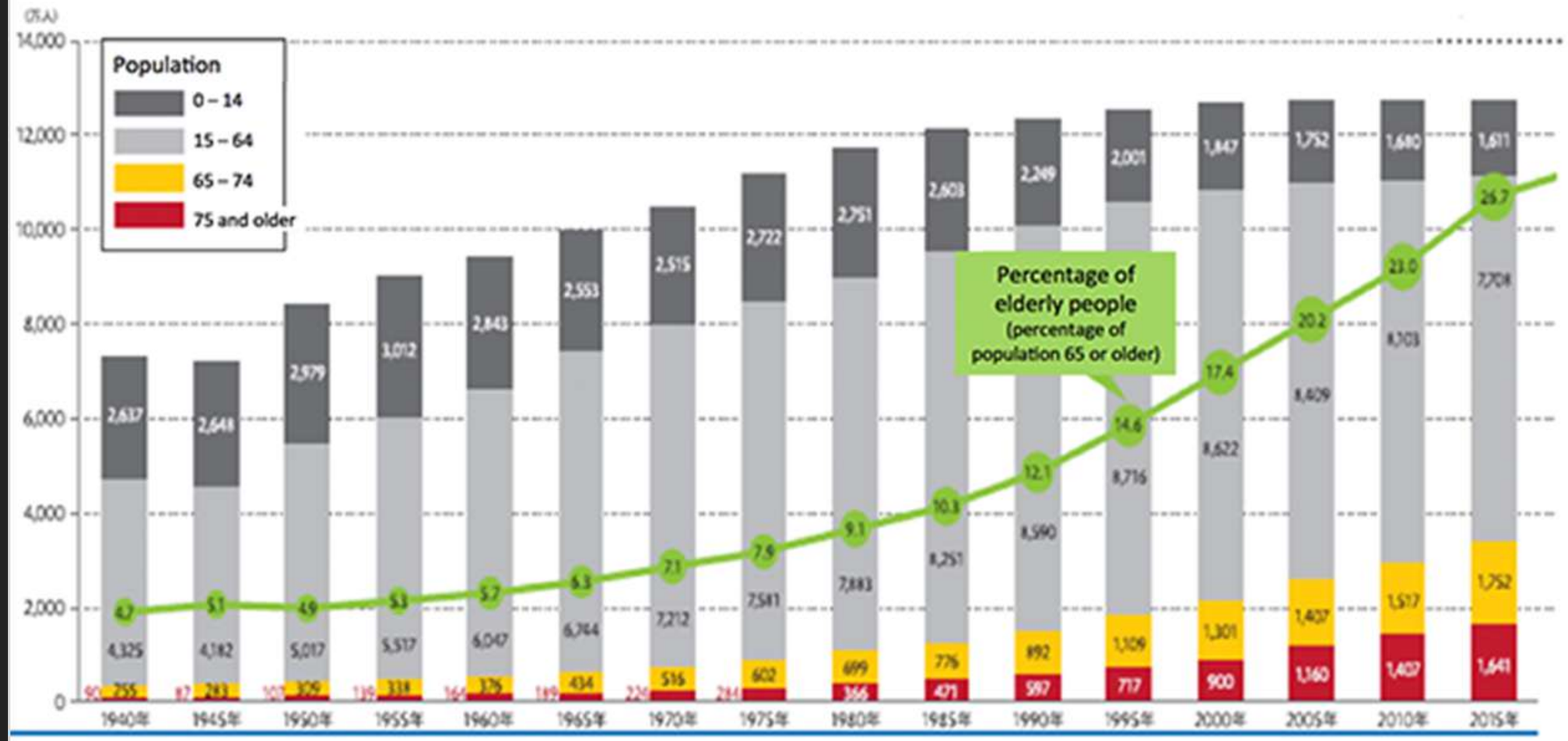
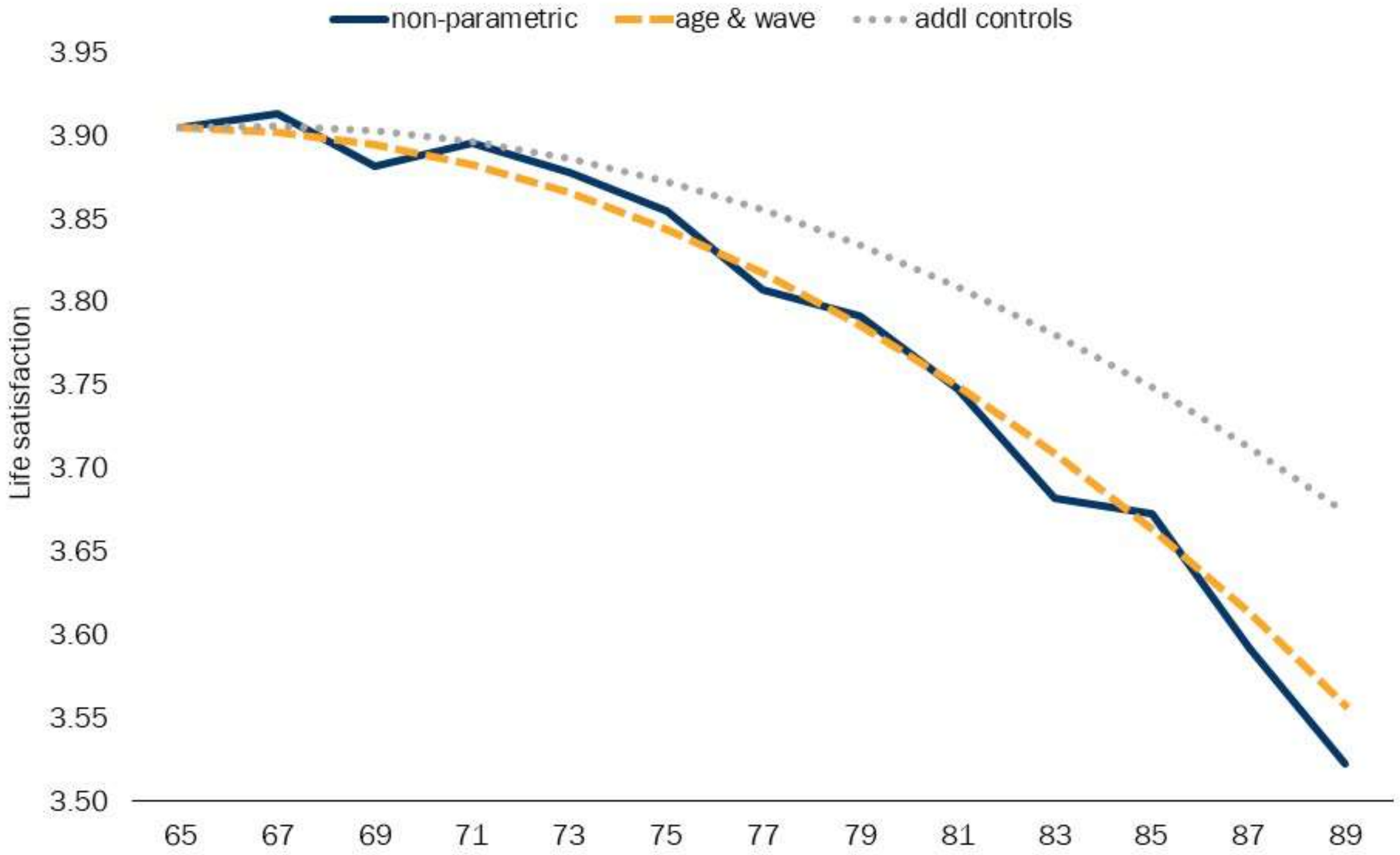
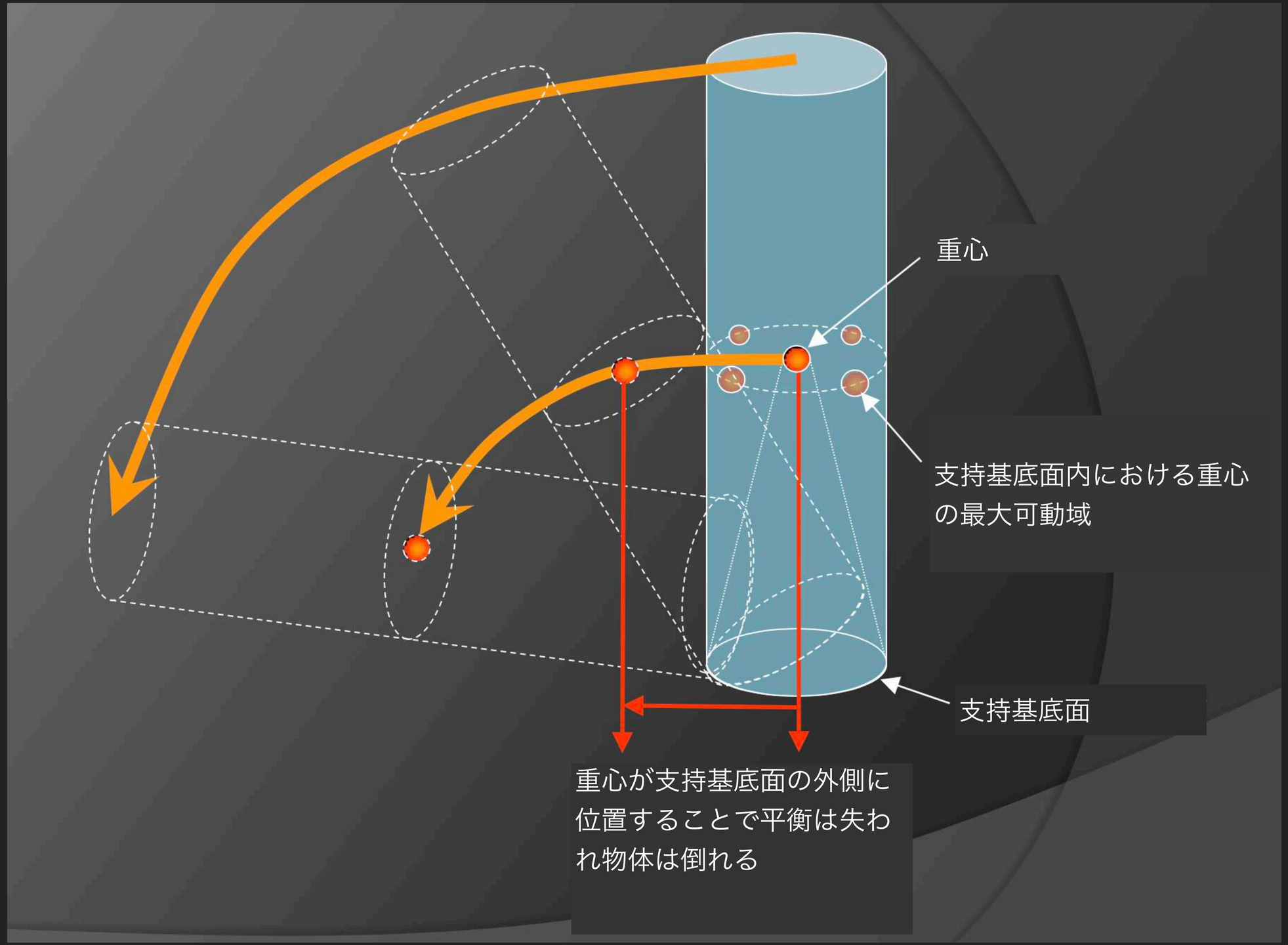


Figure 4. Average life satisfaction by age



Source: Hudomiet, Hurd and Rohwedder. (2020) Notes: The solid "non-parametric" line shows average 2-year longitudinal changes sequenced together into a single line. The dashed line shows a predicted age-profile using a first-differences panel regression model with a quadratic function of age. The dotted line shows model predictions using a similar model that includes additional demographic, labor market, and health controls.

BROOKINGS


重心
支持基底面内における重心の最大可動域
支持基底面
重心が支持基底面の外側に位置することで平衡は失われ物体は倒れる

テスト

Figure 6.15 The single-leg stance balance test.

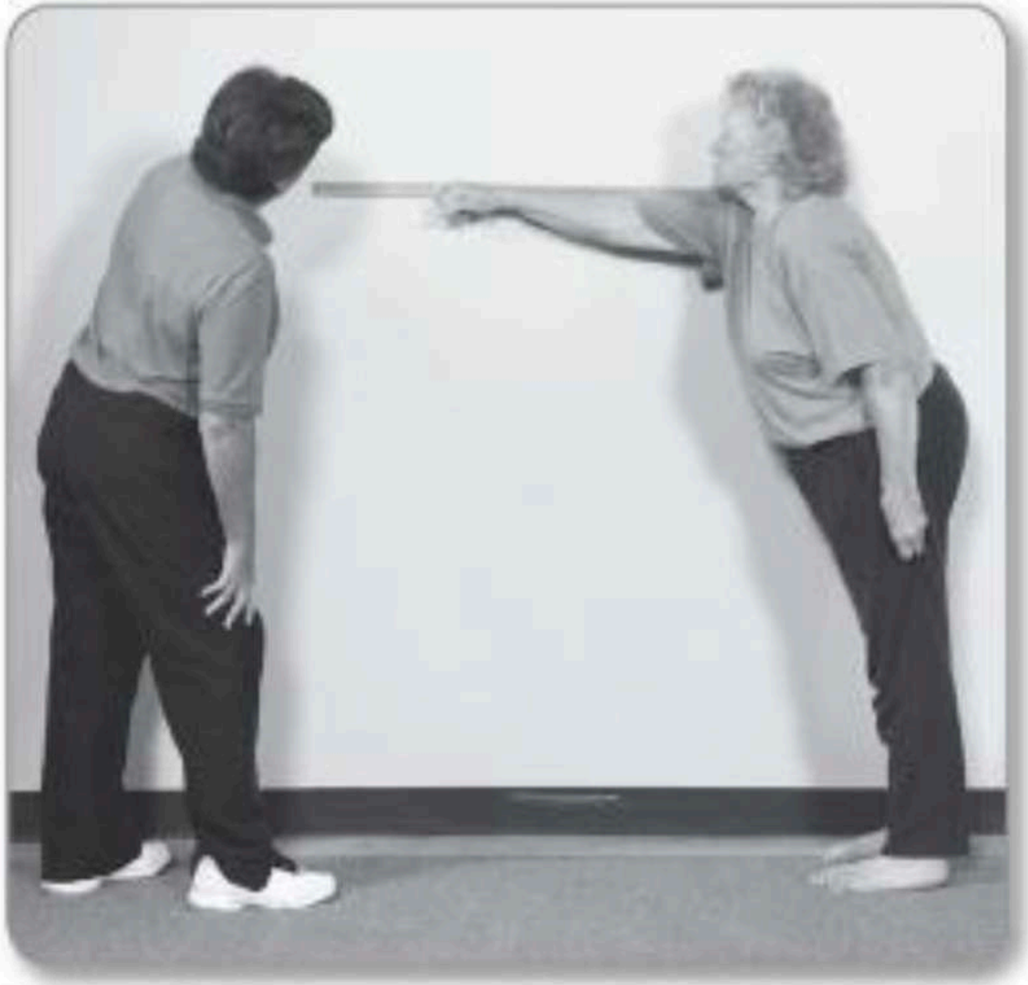


Figure 6.16 The functional reach test.

Figure 6.17 The 8-foot (2.4 m) up-and-go test.

より良いバランスとアジリティ

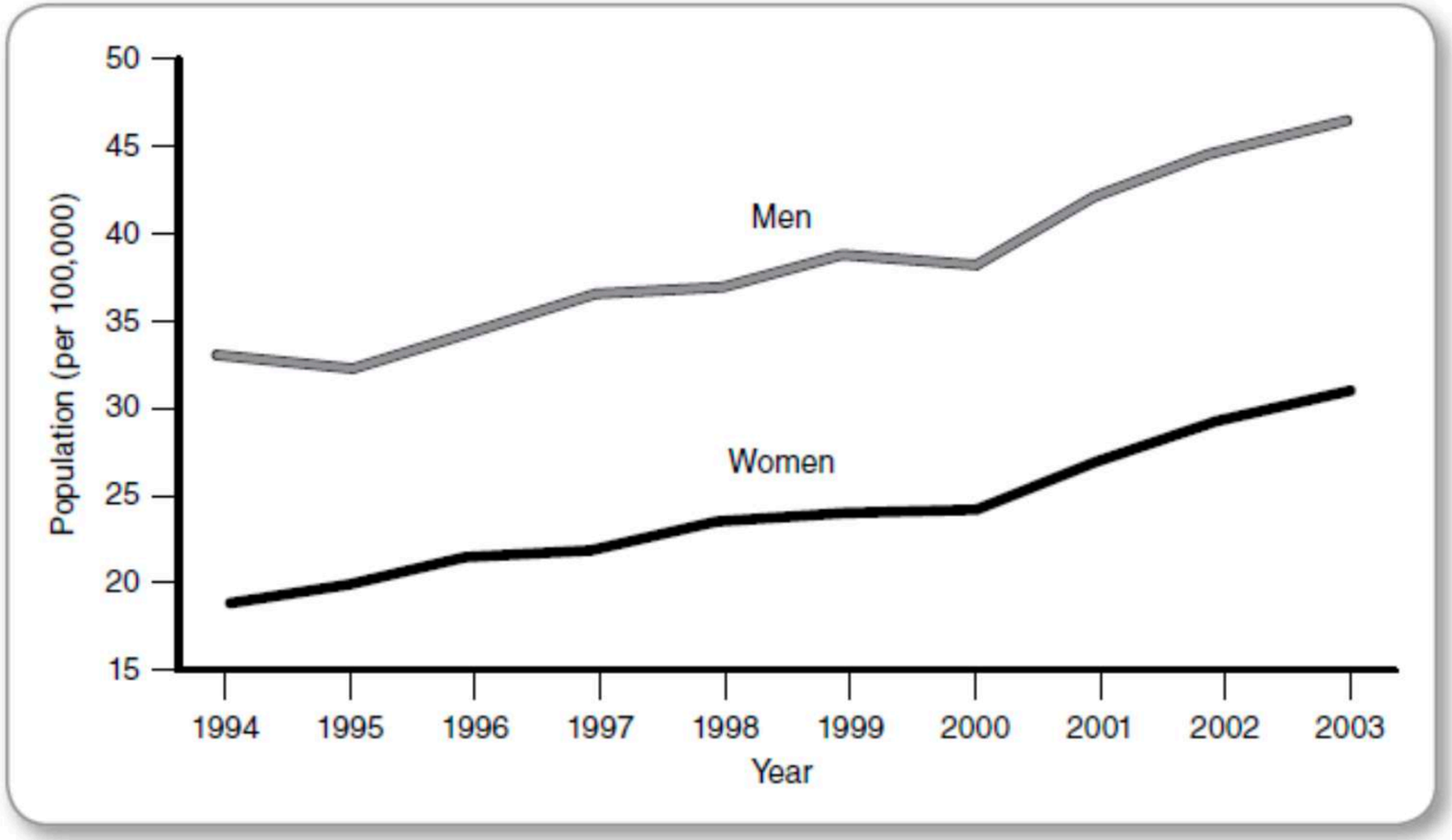


Figure 6.11 Age-adjusted fatal fall injury rates among men and women aged 65 years and older in the United States between 1994 and 2003.

Reprinted from CDC.

処方

ターゲット

- 太極拳
- バランスとアジリティのトレーニングプログラム
- バランスプラットフォーム
- 全身バイブレーション
- 活動を促進するビデオゲーム

サポート

- 下半身のパワートレーニング
- スピードトレーニング
- 柔軟性トレーニング

JAMA Internal Medicine

Original Investigation

October 2018

Effectiveness of a Therapeutic *Tai Ji Quan* Intervention vs a Multimodal Exercise Intervention to Prevent Falls Among Older Adults at High Risk of Falling

A Randomized Clinical Trial

Fuzhong Li, PhD[1,2]; Peter Harmer, PhD, MPH[3]; Kathleen Fitzgerald, MD[4]; et al

» Author Affiliations | Article Information

JAMA Intern Med. 2018;178(10):1301-1310. doi:10.1001/jamainternmed.2018.3915

Limb Force, Functional Capacity, and Static and Dynamic Balance in Older Female Adults

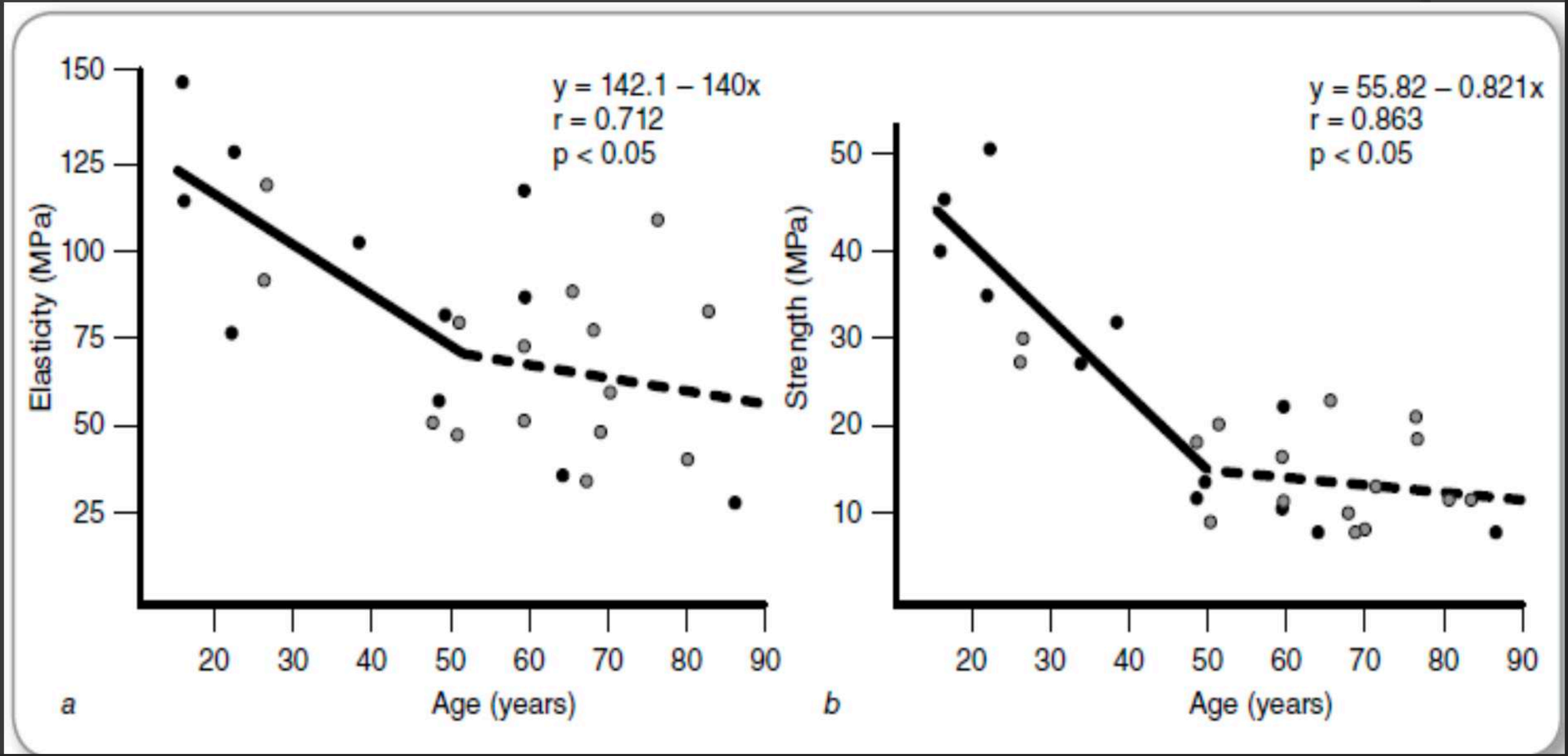
Paula Born Lopes, Gleber Pereira, Angélica Lodovico, Paulo C.B. Bento, and André L.F. Rodacki

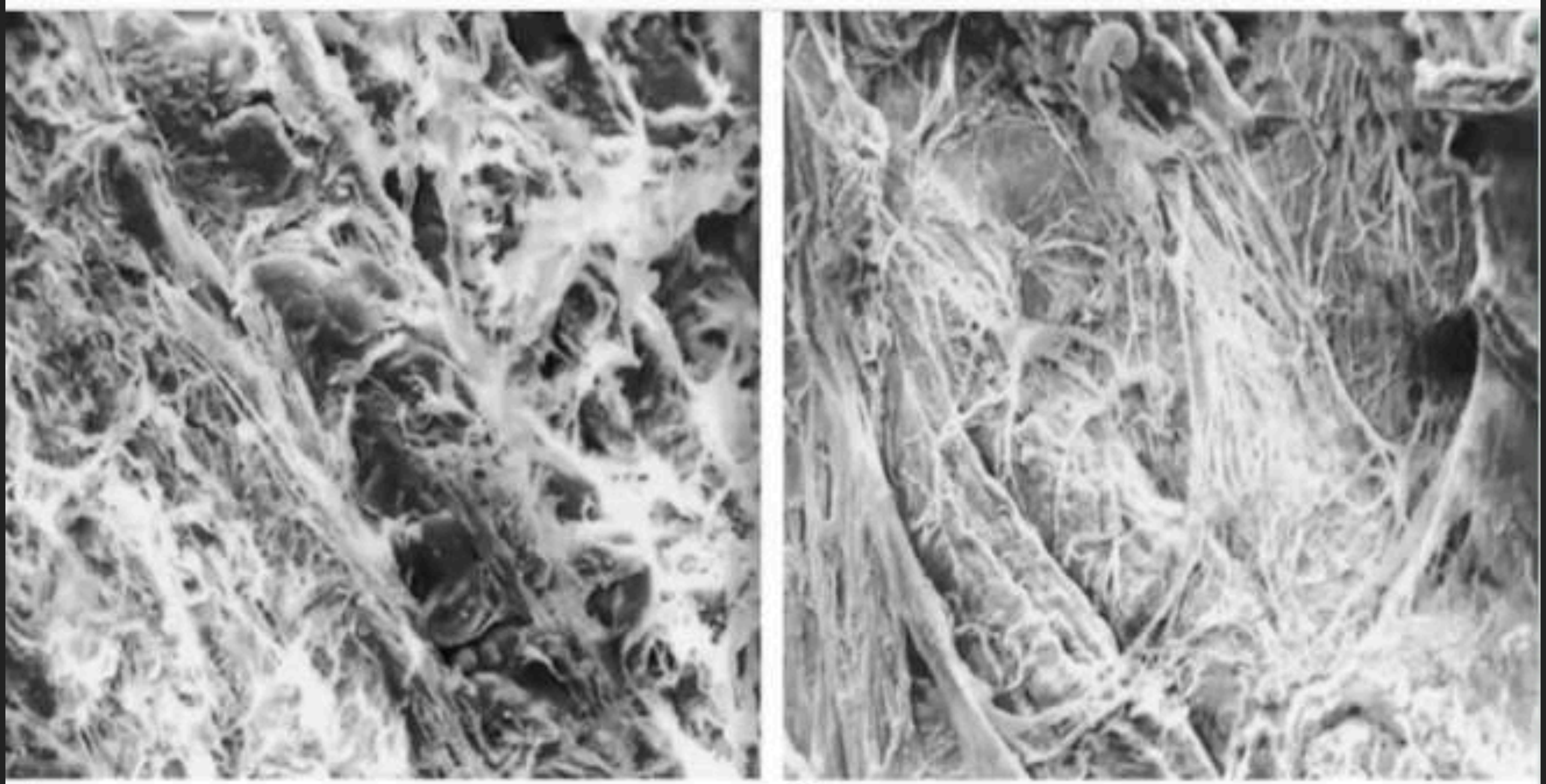
Published Online: 1 Oct 2016 | https://doi.org/10.1089/rej.2015.1764

Abstract

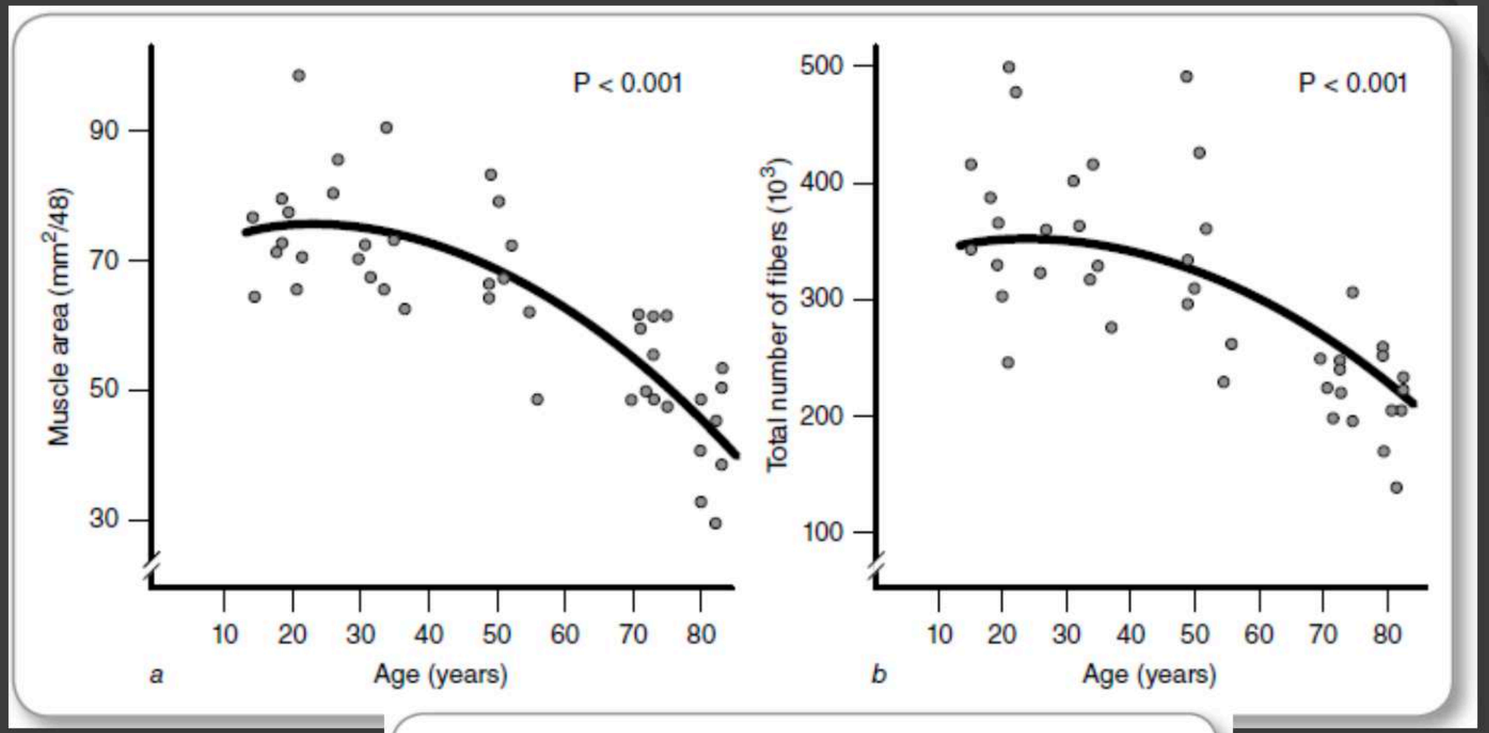
It has been proposed that muscle power is more effective to prevent falls than muscle force production capacity, as rapid reactions are required to allow the postural control. This study aimed to compare the effects of strength and power training on lower limb force, functional capacity, and static and dynamic balance in older female adults. Thirty-seven volunteered healthy women had been allocated into the strength-training group ($n = 14$; 69 ± 7.3 years, 155 ± 5.6 cm, 72 ± 9.7 kg), the power-training group ($n = 12$; 67 ± 7.4 years, 153 ± 5.5 cm, 67.2 ± 7 kg), and control group ($n = 11$; 65 ± 3.1 years, 154 ± 5.6 cm, 70.9 ± 3 kg). After 12 weeks of training, the strength-training and power-training groups increased significantly maximum dynamic strength (29% and 27%), isometric strength (26% and 37%), and step total time (13% and 14%, dynamic balance), respectively. However, only the power-training group increased the rate of torque development (55%) and the functional capacity in 30-second chair stand (22%) and in time up and go tests (–10%). Empirically, power training may reduce the risk of injuries due to lower loads compared to strength training, and consequently, the physical effort demand during the training session is lower. Therefore, power training should be recommended as attractive training stimuli to improve lower limb force, functional capacity, and postural control of older female adults.

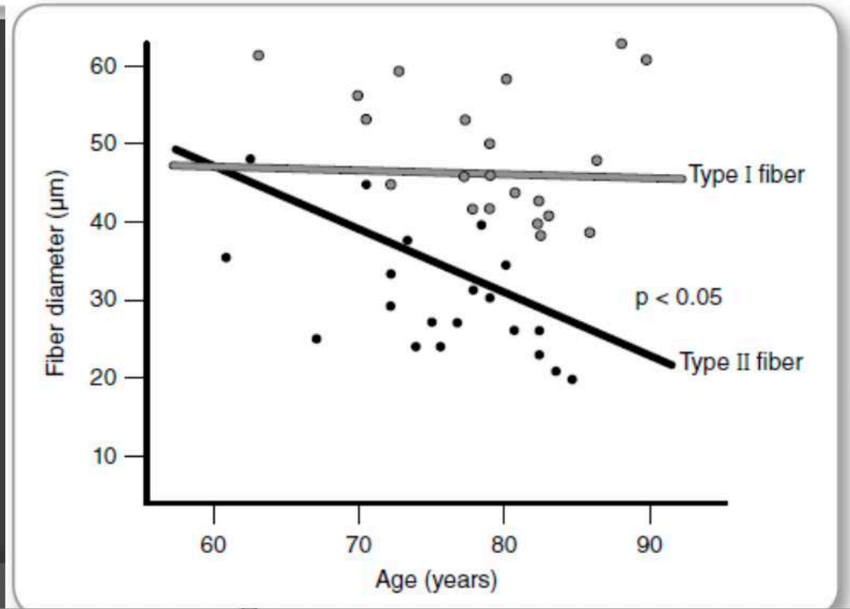
結合組織の曲線


y = 142.1 – 140x
r = 0.712
p < 0.05
Elasticity (MPa)
150
125
100
75
50
25
20
30
40
50
60
70
80
90
Age (years)
a
y = 55.82 – 0.821x
r = 0.863
p < 0.05
Strength (MPa)
50
40
30
20
10
20
30
40
50
60
70
80
90
Age (years)
b


A
A: Free
B
B: immobilized (Järvinen 2002)

神経筋系の曲線

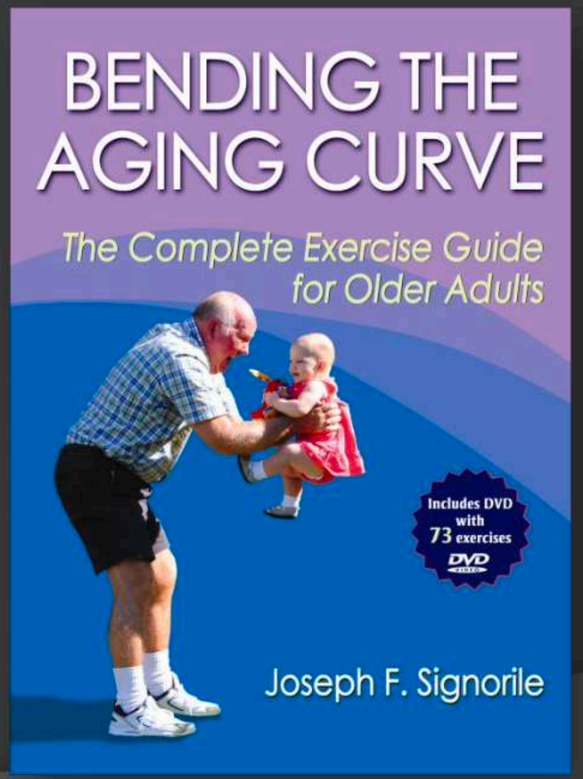

P < 0.001
Muscle area (mm²/48)
90
70
50
30
10 20 30 40 50 60 70 80
a
Age (years)
P < 0.001
Total number of fibers (10³)
500
400
300
200
100
10 20 30 40 50 60 70 80
b
Age (years)


Fiber diameter (μm)
60
50
40
30
20
10
Type I fiber
p < 0.05
Type II fiber
60 70 80 90
Age (years)

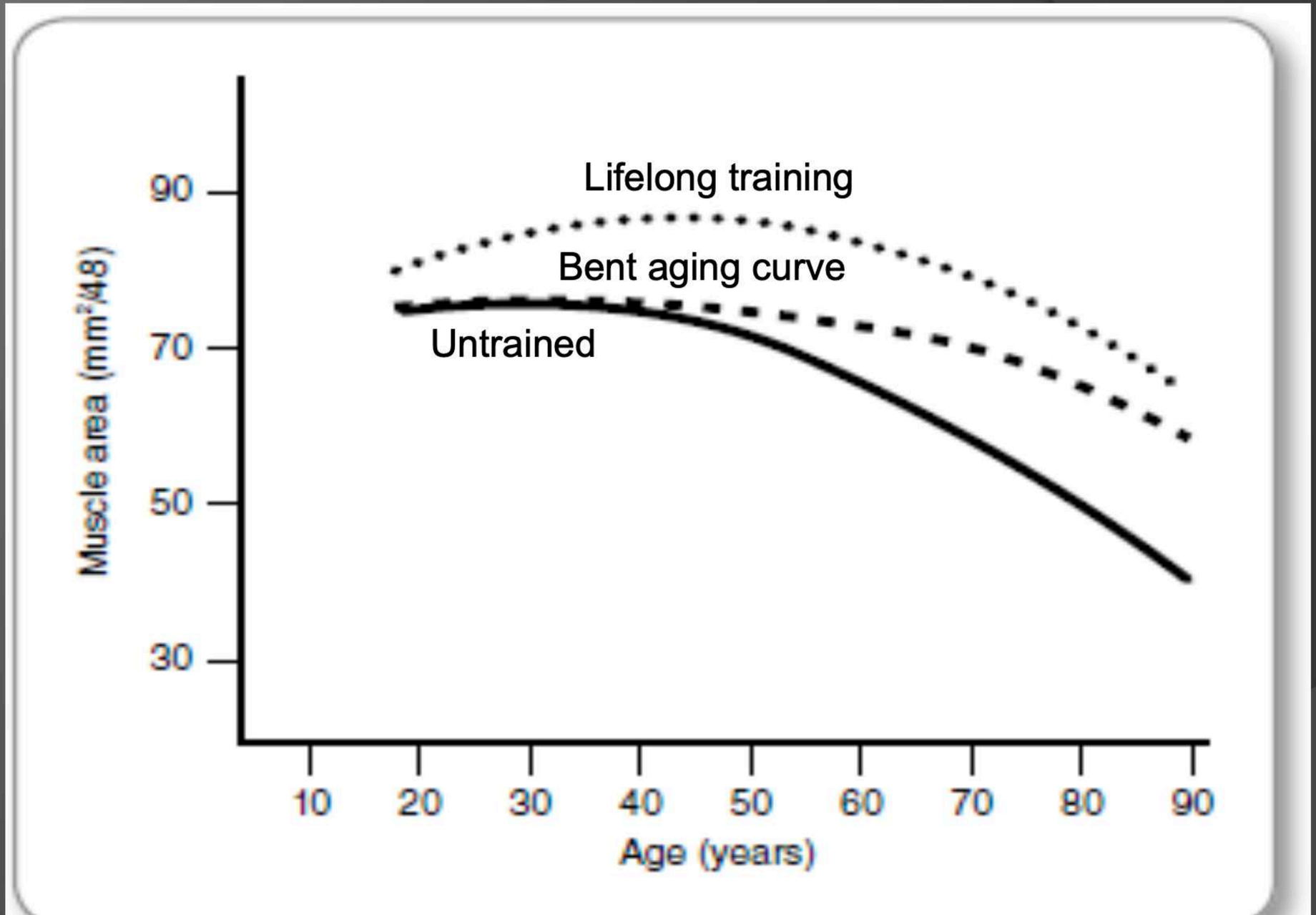
年齢の曲線を曲げる

A periodized prescription for improved aging

Joseph Signorile, PhD



年齢の曲線を曲げる


Lifelong training
Bent aging curve
Untrained
Muscle area (mm²/48)
90
70
50
30
10
20
30
40
50
60
70
80
90
Age (years)


This is how you do retirement
How will you move at age 68?

Comparison of Cardiorespiratory and Metabolic Responses in Kettlebell High-Intensity Interval Training Versus Sprint Interval Cycling

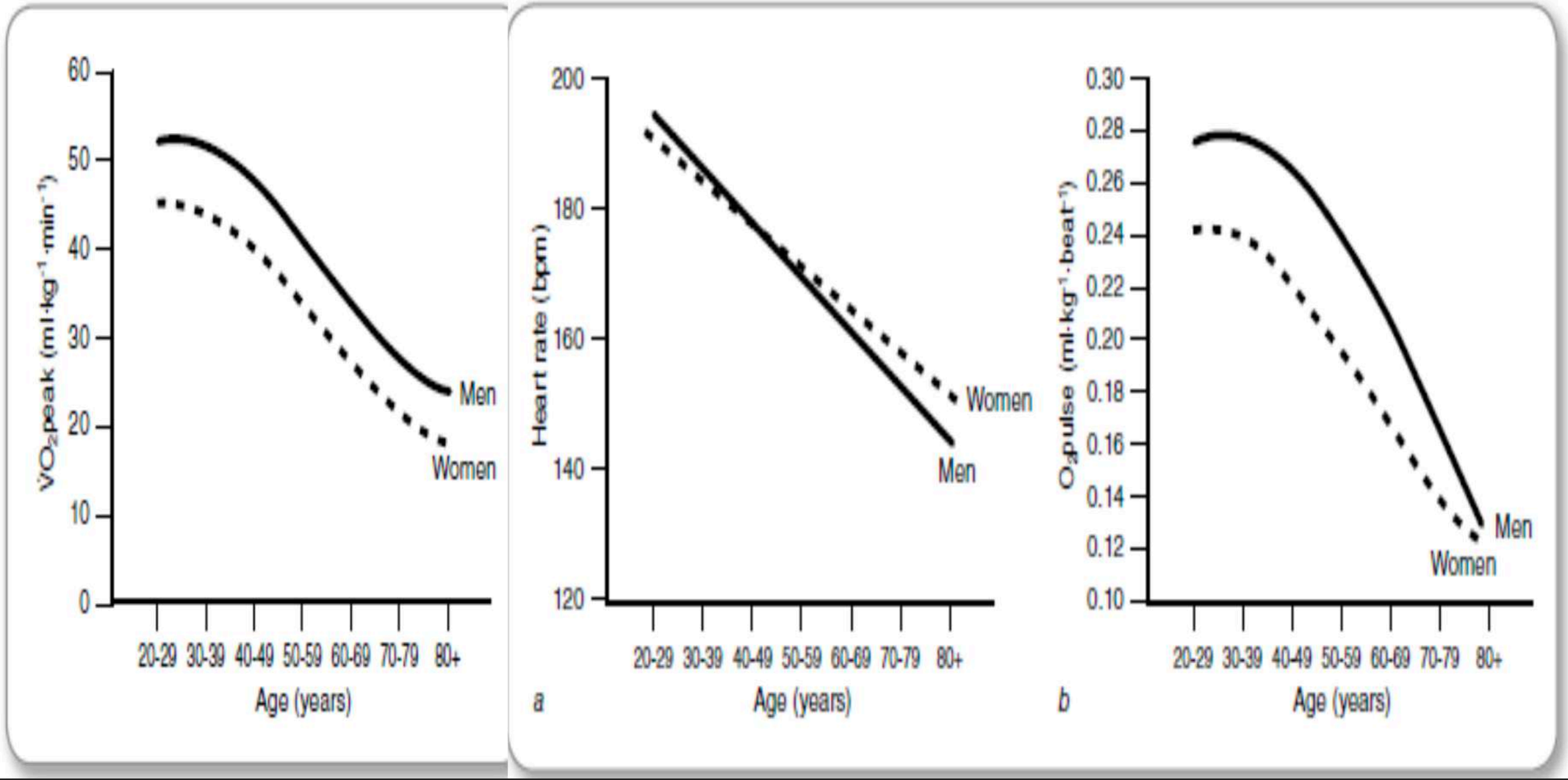
Williams, Brian M.; Kraemer, Robert R.

Author Information

Journal of Strength and Conditioning Research: December 2015 - Volume 29 - Issue 12 - p 3317-3325
doi: 10.1519/JSC.0000000000001193

Williams, BM and Kraemer, RR. Comparison of cardiorespiratory and metabolic responses in kettlebell high-intensity interval training versus sprint interval cycling. *J Strength Cond Res* 29(12): 3317–3325, 2015—The purpose of this study was to determine the effectiveness of a novel exercise protocol we developed for kettlebell high-intensity interval training (KB-HIIT) by comparing the cardiorespiratory and metabolic responses to a standard sprint interval cycling (SIC) exercise protocol. Eight men volunteered for the study and completed 2 preliminary sessions, followed by two 12-minute sessions of KB-HIIT and SIC in a counterbalanced fashion. In the KB-HITT session, 3 circuits of 4 exercises were performed using a Tabata regimen. In the SIC session, three 30-second sprints were performed, with 4 minutes of recovery in between the first 2 sprints and 2.5 minutes of recovery after the last sprint. A within-subjects' design over multiple time points was used to compare oxygen consumption (V[Combining Dot Above]O_2), respiratory exchange ratio (RER), tidal volume (TV), breathing frequency (f), minute ventilation (V_E), caloric expenditure rate (kcal·min^{-1}), and heart rate (HR) between the exercise protocols. Additionally, total caloric expenditure was compared. A significant group effect, time effect, and group × time interaction were found for V[Combining Dot Above]O_2, RER, and TV, with V[Combining Dot Above]O_2 being higher and TV and RER being lower in the KB-HIIT compared with the SIC. Only a significant time effect and group × time interaction were found for f, V_E, kcal·min^{-1}, and HR. Additionally, total caloric expenditure was found to be significantly higher during the KB-HIIT. The results of this study suggest that KB-HIIT may be more attractive and sustainable than SIC and can be effective in stimulating cardiorespiratory and metabolic responses that could improve health and aerobic performance.

Cardiovascular Curves



Effect of an Acute Bout of Kettlebell Exercise on Glucose Tolerance in Sedentary Men: A Preliminary Study

SAMANTHA GREENWALD[†1], EDWARD SEGER[†1], DAVID NICHOLS[*1], ANDREW D. RAY[‡2], TODD C. RIDEOUT[‡1], and LUC E. GOSSELIN[‡1]

[1] Exercise and Nutrition Sciences, University at Buffalo, Buffalo, NY, USA;
[2] Rehabilitation Sciences, University at Buffalo, Buffalo, NY, USA

ABSTRACT

International Journal of Exercise Science 9(4): 524-535, 2016. Impaired glucose tolerance can have significant health consequences. The purposes of this preliminary study were to examine whether a single session of kettlebell exercise improves acute post-exercise glucose tolerance in sedentary individuals, and whether it was as effective as high-intensity interval running. Six sedentary male subjects underwent a two-hour oral glucose tolerance test following three different conditions: 1) control (no exercise); 2) kettlebell exercise (2 sets of 7 exercises, 15 repetitions per exercise with 30 seconds rest between each exercise); or 3) high-intensity interval running (10 one-minute intervals at a workload corresponding to 90% VO_2max interspersed with one-minute active recovery periods). Blood glucose and insulin levels were measured before (0 minutes), and 60 and 120 minutes after glucose ingestion. Both kettlebell and high-intensity interval running exercise significantly lowered blood glucose 60 minutes after glucose ingestion compared with control. However, there was no significant difference in blood glucose between the two exercise conditions at any time point. In addition, there were no significant differences in insulin concentration between high intensity interval running, kettlebell, and control conditions at all time points. Results indicate that an acute bout of kettlebell exercise is as effective as high intensity interval running at improving glucose tolerance in sedentary young men.

Acute Cardiorespiratory and Metabolic Effects of a Sandbag Resistance Exercise Protocol

Nicholas A. Ratamess, Jie Kang, Jeremy D. Kuper, Elizabeth A. O'Grady, Nicole L. Ellis, Ira T. Vought, Emma Culleton, Jill A. Bush, and Avery D. Faigenbaum

Department of Health and Exercise Science, The College of New Jersey, Ewing, New Jersey

Table 4. Ratings of perceived exertion during the SB protocol.*

	Set 1	Set 2	Set 3	Mean
Front squat	5.75 ± 1.7	7.88 ± 1.2†	8.38 ± 1.2†‡	7.33 ± 1.0
Clean	6.00 ± 1.4	7.50 ± 1.2§	8.75 ± 1.4†‡	7.42 ± 1.1
Bear hug squat	7.00 ± 1.5	8.38 ± 1.2	9.38 ± 1.1†‡	8.25 ± 1.0¶
Rotational DL	7.00 ± 1.2	8.25 ± 1.1†	9.38 ± 0.7†‡	8.21 ± 0.9¶
Lunge with rotation	6.71 ± 1.0	8.13 ± 1.0†	9.13 ± 1.1†‖	8.06 ± 0.8
Lateral drag	6.38 ± 1.1	7.88 ± 1.1†	9.00 ± 1.1†‡	7.75 ± 0.9
OH press	6.88 ± 1.1	8.25 ± 1.2†	9.13 ± 1.0†‡	8.08 ± 1.0¶
Shouldering	7.13 ± 1.0	8.50 ± 1.3†	9.25 ± 1.0†‡	8.29 ± 1.0¶

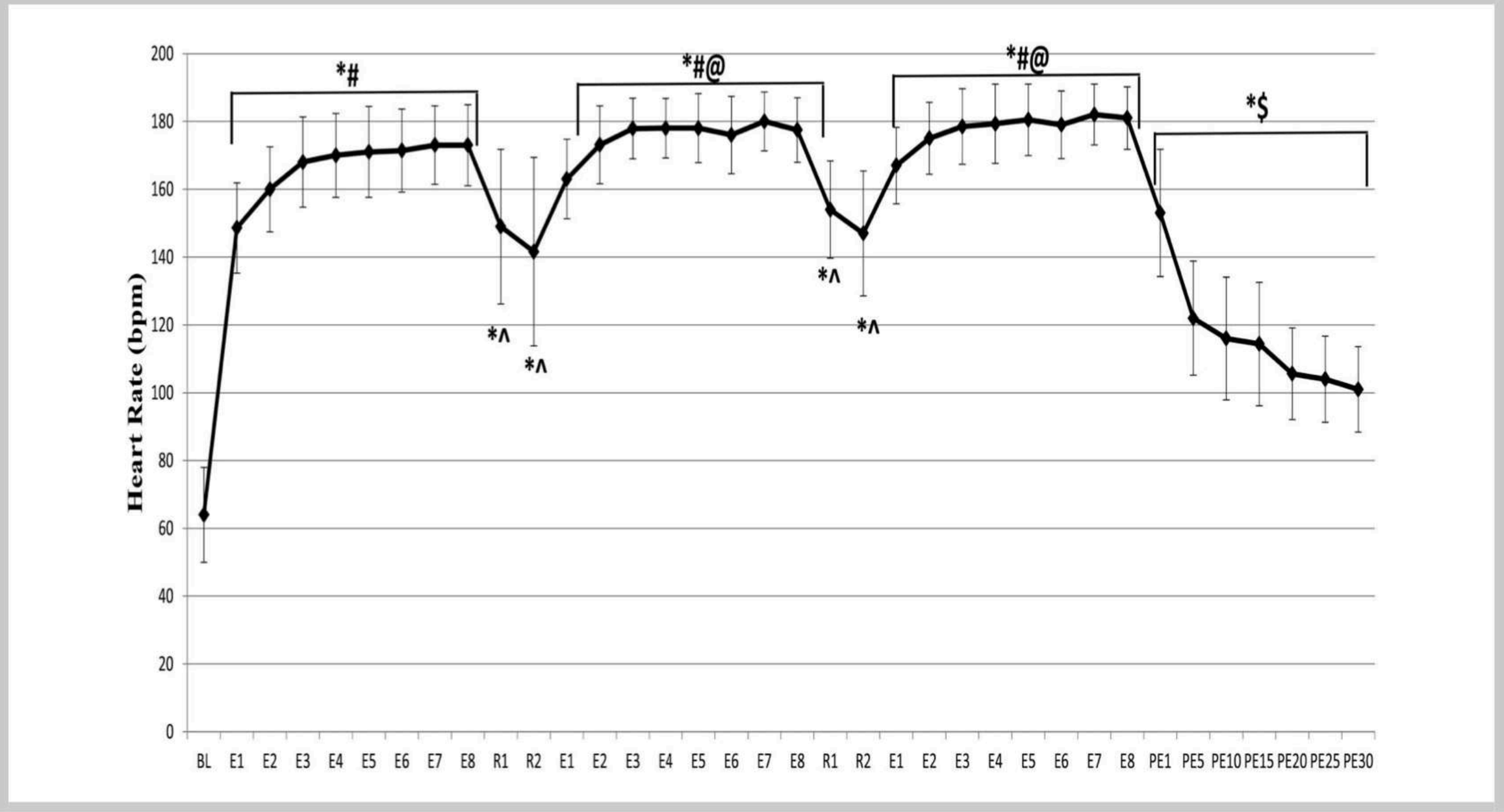


Figure 4. Heart rate (HR) responses during the SB protocol. E = exercise number; R1 = first minute of rest after set; R2 = second minute of rest after set; PE = postexercise; *$p \leq 0.05$ from baseline (BL); #$p \leq 0.05$ from E1 to E8; @$p \leq 0.05$ compared with all exercises in set 1; ^$p \leq 0.05$ compared with all exercise values; \$$p \leq 0.05$ from PE1 to PE30.

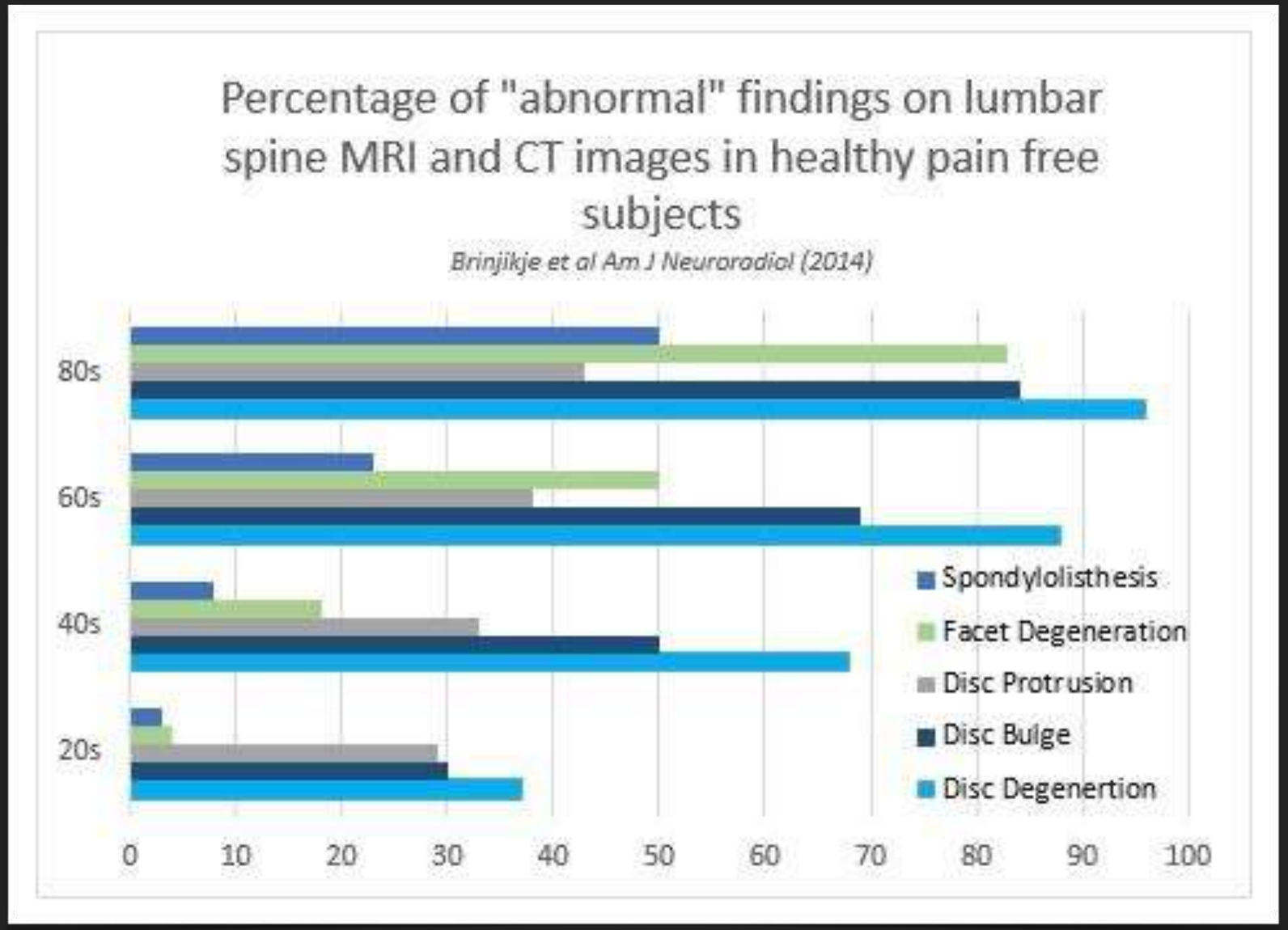
Heart Rate

Heart rate values were significantly elevated during all exercise and PE trials ($p < 0.001$; $\eta^2 = 0.97$). Compared with CT (65.9 ± 14.0 b·min^{-1}), mean exercise HR values were significantly higher during the SB (169.7 ± 11.2 b·min^{-1}), 60$\dot{V}O_2$R (151.8 ± 9.8 b·min^{-1}), and 80$\dot{V}O_2$R (170.5 ± 13.5 b·min^{-1}) protocols. No significant differences were observed between SB and 80$\dot{V}O_2$R, although both protocols yielded significantly higher HR values than 60$\dot{V}O_2$R. Similar results were observed for peak HR (SB = 183.0 ± 8.7 b·min^{-1}; 60$\dot{V}O_2$R = 160.4 ± 11.8 b·min^{-1}; and 80$\dot{V}O_2$R = 177.4 ± 14.4 b·min^{-1}). Mean HR during the 30-minute PE period in SB (116.7 ± 14.1 b·min^{-1}) was significantly higher than 60$\dot{V}O_2$R (87.6 ± 13.1 b·min^{-1}) and 80$\dot{V}O_2$R (101.5 ± 9.5 b·min^{-1}) and mean HR in 80$\dot{V}O_2$R was significantly higher than 60$\dot{V}O_2$R.

最も効果的な
レジスタンストレーニング方法

1RMの60%を用いる高スピードの爆発的トレーニングは、低スピード、または1RMの80%の高スピード爆発的コンディションよりも、より多くのカロリーを燃焼し、サルコペニア的肥満の個人におけるADLパフォーマンスを効果的に向上させ、転倒の可能性を低減させる；であるから、高スピード、中程度のレジスタンストレーニングのサイクルは、トレーニングのメニューにおいて「一粒で二度美味しい」スペシャルのようである。

クライアントの健康リスクを理解する



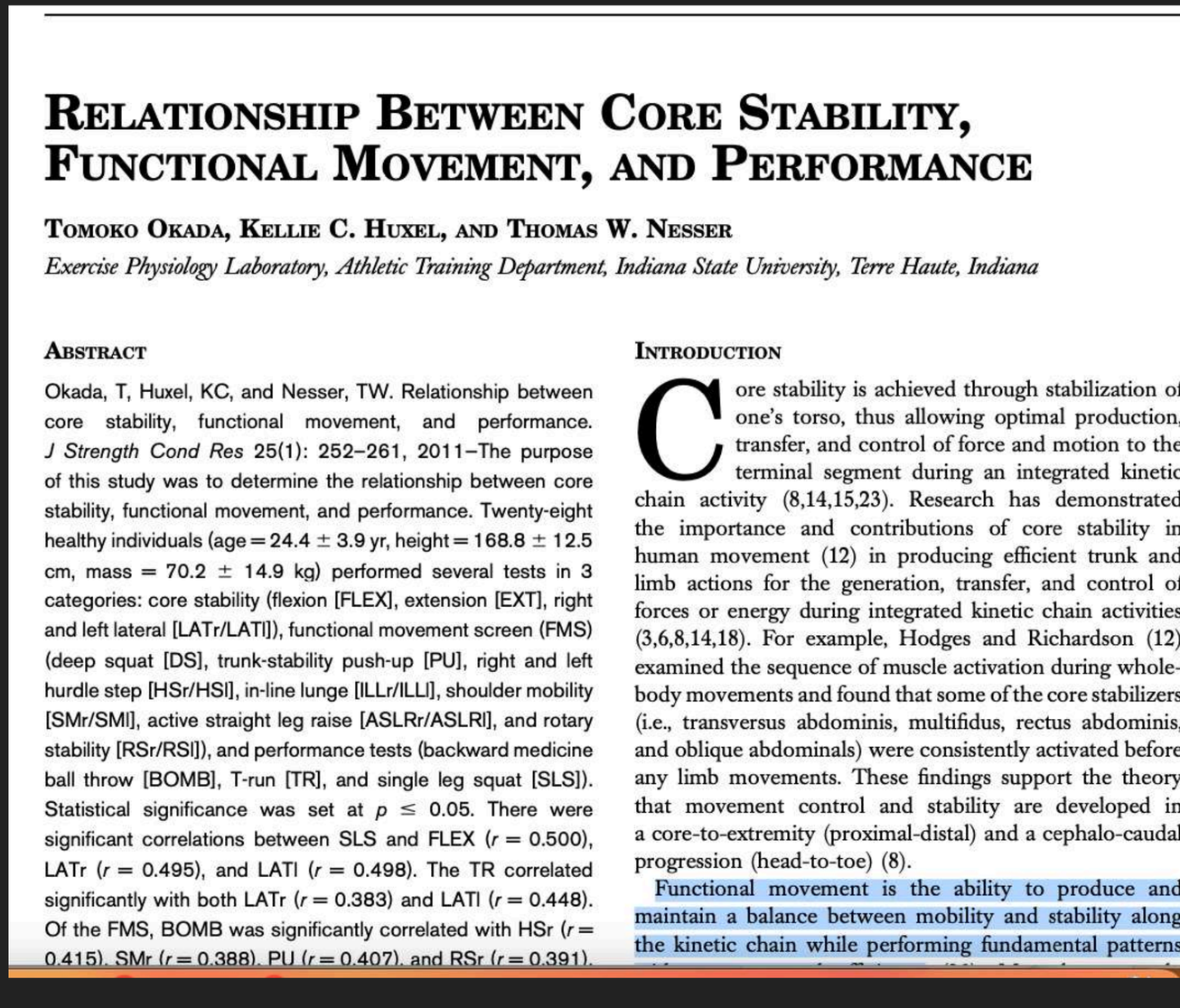

Rx
DATE
PATIENT NAME
ADDRESS
Prescription:
exercise

ジョシュの失敗

- スピードムーブメントの紹介が早すぎた：スピードはスタビリティのデマンドを増大させる。
- 負荷重量を重くするのが早すぎた：筋肉の内的なコーディネーションは見た目でわかりにくい。
- 様々な環境においての動きの習熟を十分に構築しなかった：ムーブメントの語彙が少なかった。
- 減速を十分に発達させなかった：ほとんどの怪我は減速中に起こる。

パワーをよりファンクショナルにする方法

「ファンクショナルムーブメントとは、基礎的なパターンを正確性と効率性を伴って実行しながら、キネティックチェーンに沿ってモビリティとスタビリティの間のバランスを生み出し維持することができる能力である。」



Relationship Between Core Stability, Functional Movement, and Performance

Tomoko Okada, Kellie C. Huxel, and Thomas W. Nesser

Exercise Physiology Laboratory, Athletic Training Department, Indiana State University, Terre Haute, Indiana

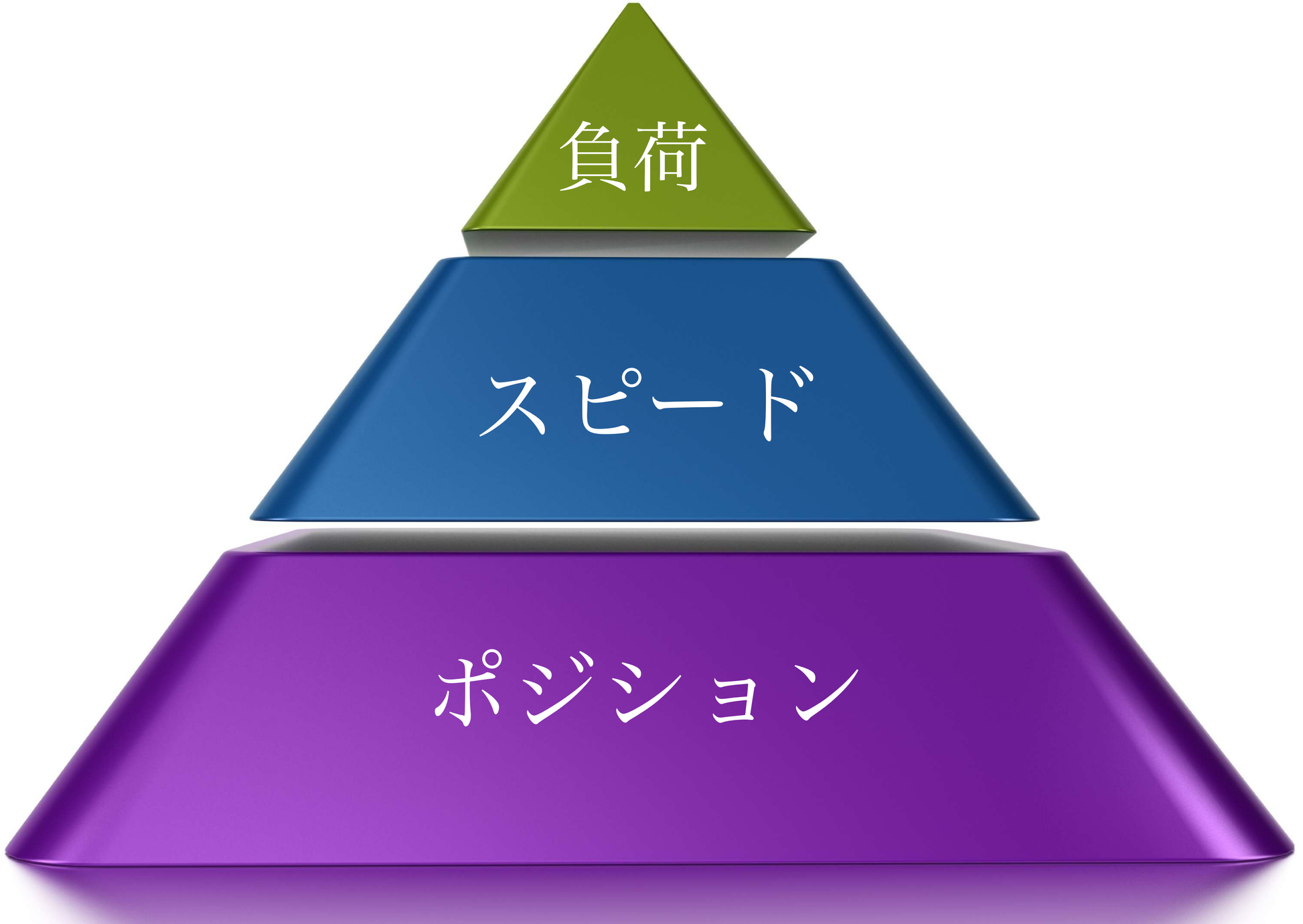
Abstract

Okada, T, Huxel, KC, and Nesser, TW. Relationship between core stability, functional movement, and performance. *J Strength Cond Res* 25(1): 252–261, 2011—The purpose of this study was to determine the relationship between core stability, functional movement, and performance. Twenty-eight healthy individuals (age = 24.4 ± 3.9 yr, height = 168.8 ± 12.5 cm, mass = 70.2 ± 14.9 kg) performed several tests in 3 categories: core stability (flexion [FLEX], extension [EXT], right and left lateral [LATr/LATl]), functional movement screen (FMS) (deep squat [DS], trunk-stability push-up [PU], right and left hurdle step [HSr/HSl], in-line lunge [ILLr/ILLl], shoulder mobility [SMr/SMl], active straight leg raise [ASLRr/ASLRl], and rotary stability [RSr/RSl]), and performance tests (backward medicine ball throw [BOMB], T-run [TR], and single leg squat [SLS]). Statistical significance was set at $p \leq 0.05$. There were significant correlations between SLS and FLEX ($r = 0.500$), LATr ($r = 0.495$), and LATl ($r = 0.498$). The TR correlated significantly with both LATr ($r = 0.383$) and LATl ($r = 0.448$). Of the FMS, BOMB was significantly correlated with HSr ($r = 0.415$), SMr ($r = 0.388$), PU ($r = 0.407$), and RSr ($r = 0.391$).

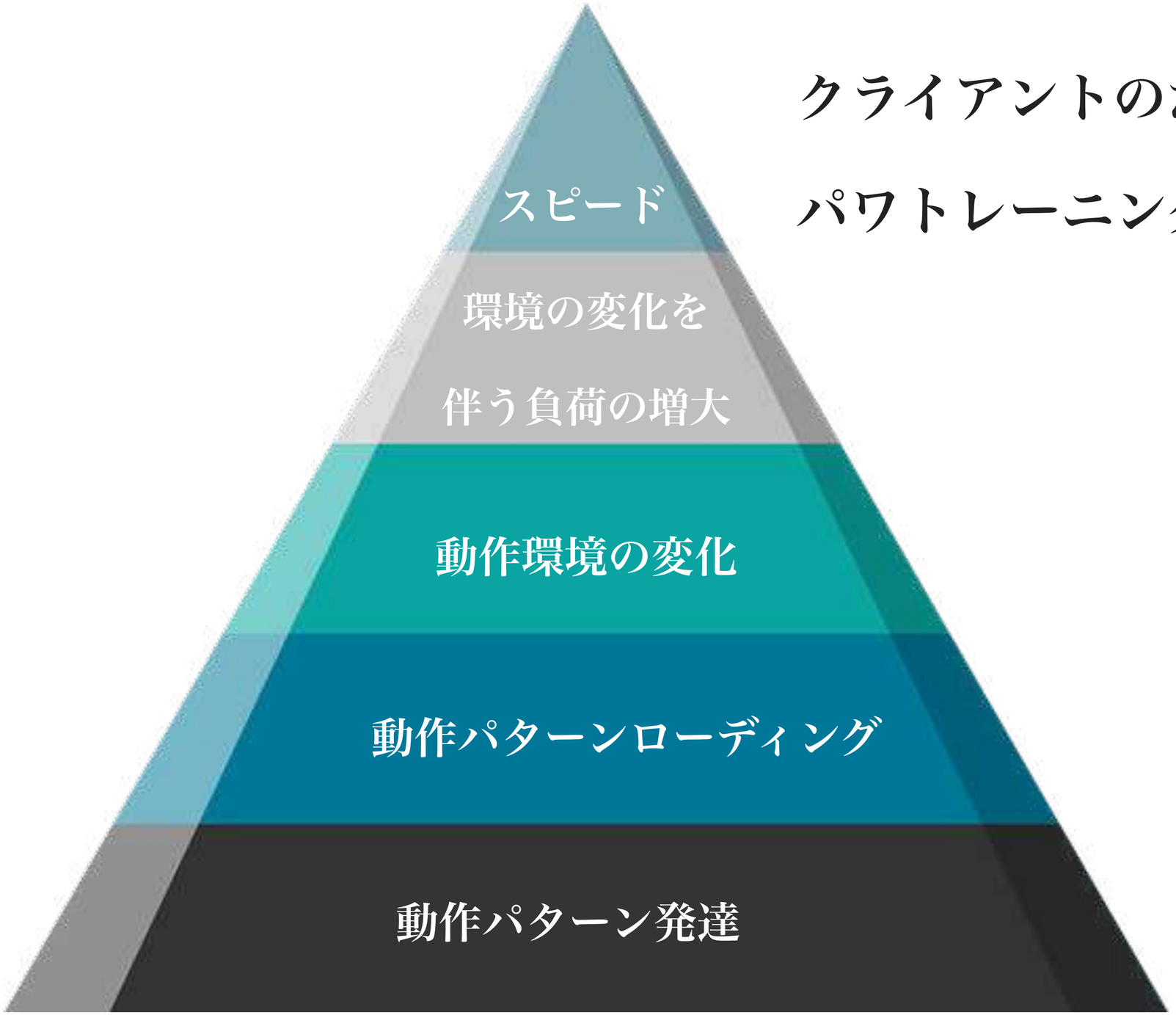
Introduction

Core stability is achieved through stabilization of one's torso, thus allowing optimal production, transfer, and control of force and motion to the terminal segment during an integrated kinetic chain activity (8,14,15,23). Research has demonstrated the importance and contributions of core stability in human movement (12) in producing efficient trunk and limb actions for the generation, transfer, and control of forces or energy during integrated kinetic chain activities (3,6,8,14,18). For example, Hodges and Richardson (12) examined the sequence of muscle activation during whole-body movements and found that some of the core stabilizers (i.e., transversus abdominis, multifidus, rectus abdominis, and oblique abdominals) were consistently activated before any limb movements. These findings support the theory that movement control and stability are developed in a core-to-extremity (proximal-distal) and a cephalo-caudal progression (head-to-toe) (8).

Functional movement is the ability to produce and maintain a balance between mobility and stability along the kinetic chain while performing fundamental patterns


負荷
スピード
ポジション

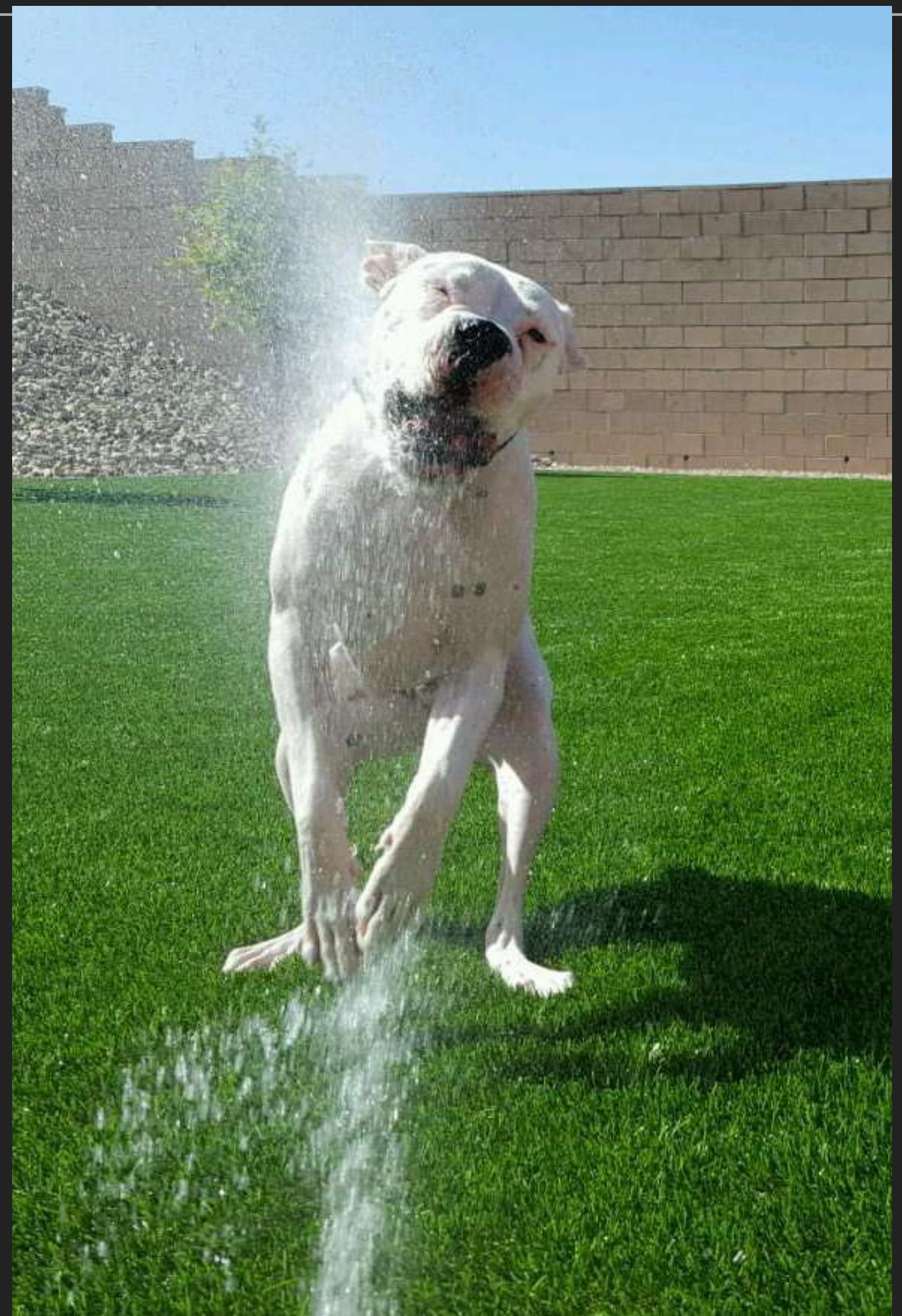
クライアントのための
パワトレーニングピラミッド




THINGS THAT MAKE YOU GO
HMMM...
© Social Mare Media
imgflip.com

ジャンプはどうなの？！

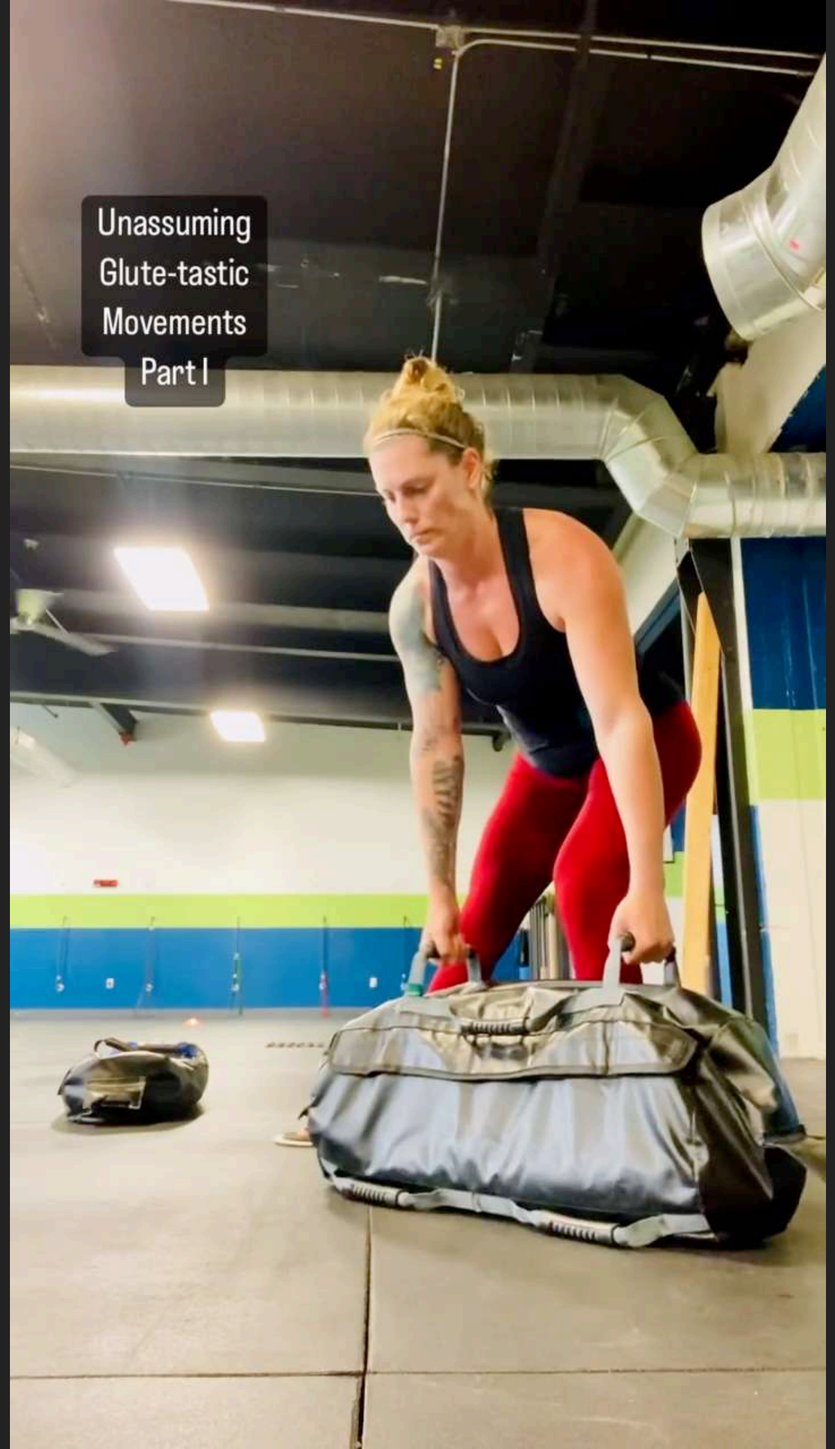
- ジャンプに関わる感情的ストレス（ガーディング）
- 実際には着地がより重要
- クライアントのトレーニング背景や健康の履歴が重要
- クライアントのニーズ
- 適切なプログレッション



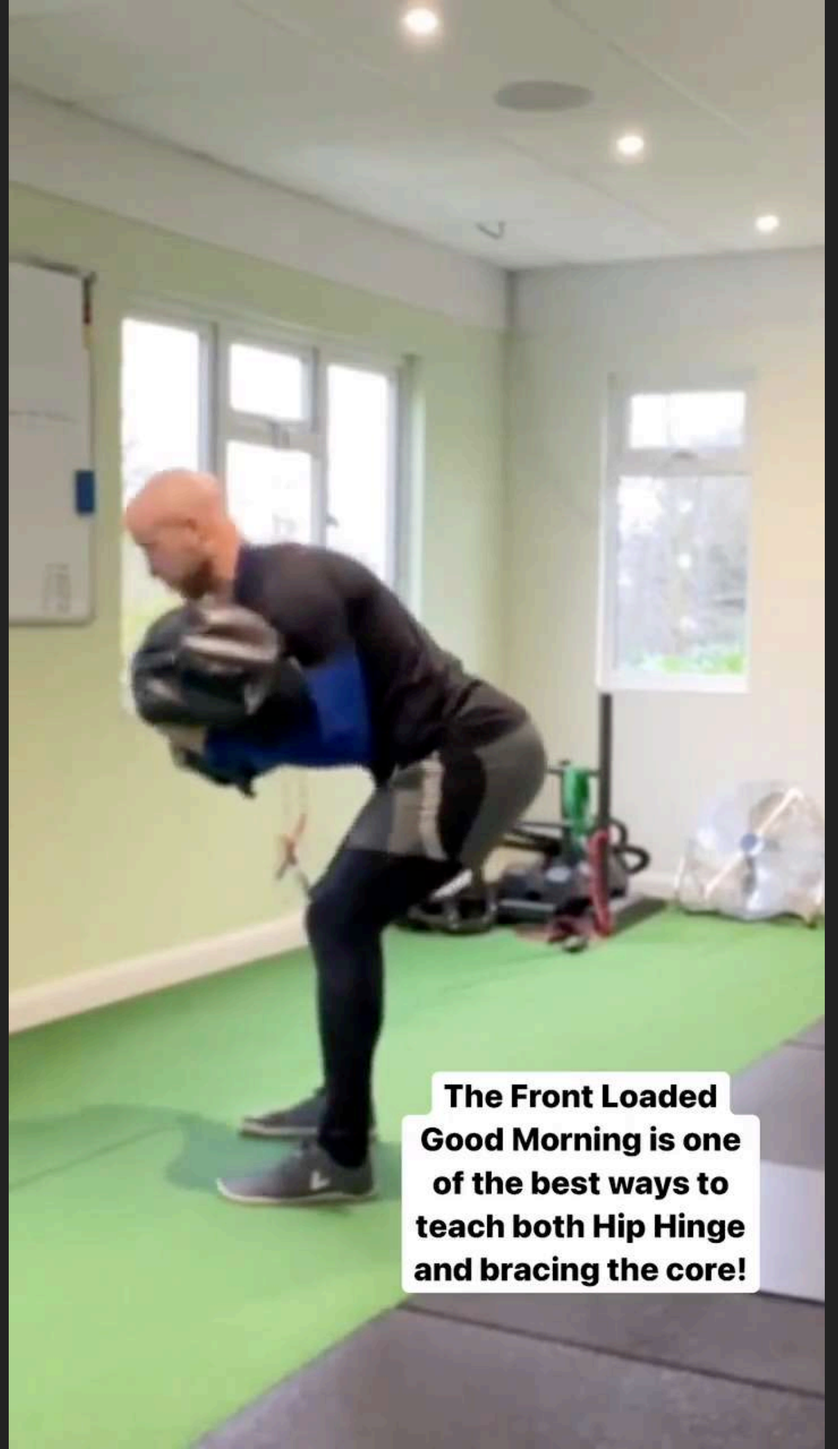

reps
joelgun10


RUNNER'S
Get Fit Now!
SEXY BODY
SANDBAG TRAINING


TEAM
YUDIN
TRAINING
18"
ROGUE


Unassuming
Glute-tastic
Movements
Part I


Kettlebell swings are great power exercises!


The Front Loaded Good Morning is one of the best ways to teach both Hip Hinge and bracing the core!


pepsi

Primal Movement Patterns

1 Hip Hinge

2 SQUAT

3 LUNGE

4 PUSH

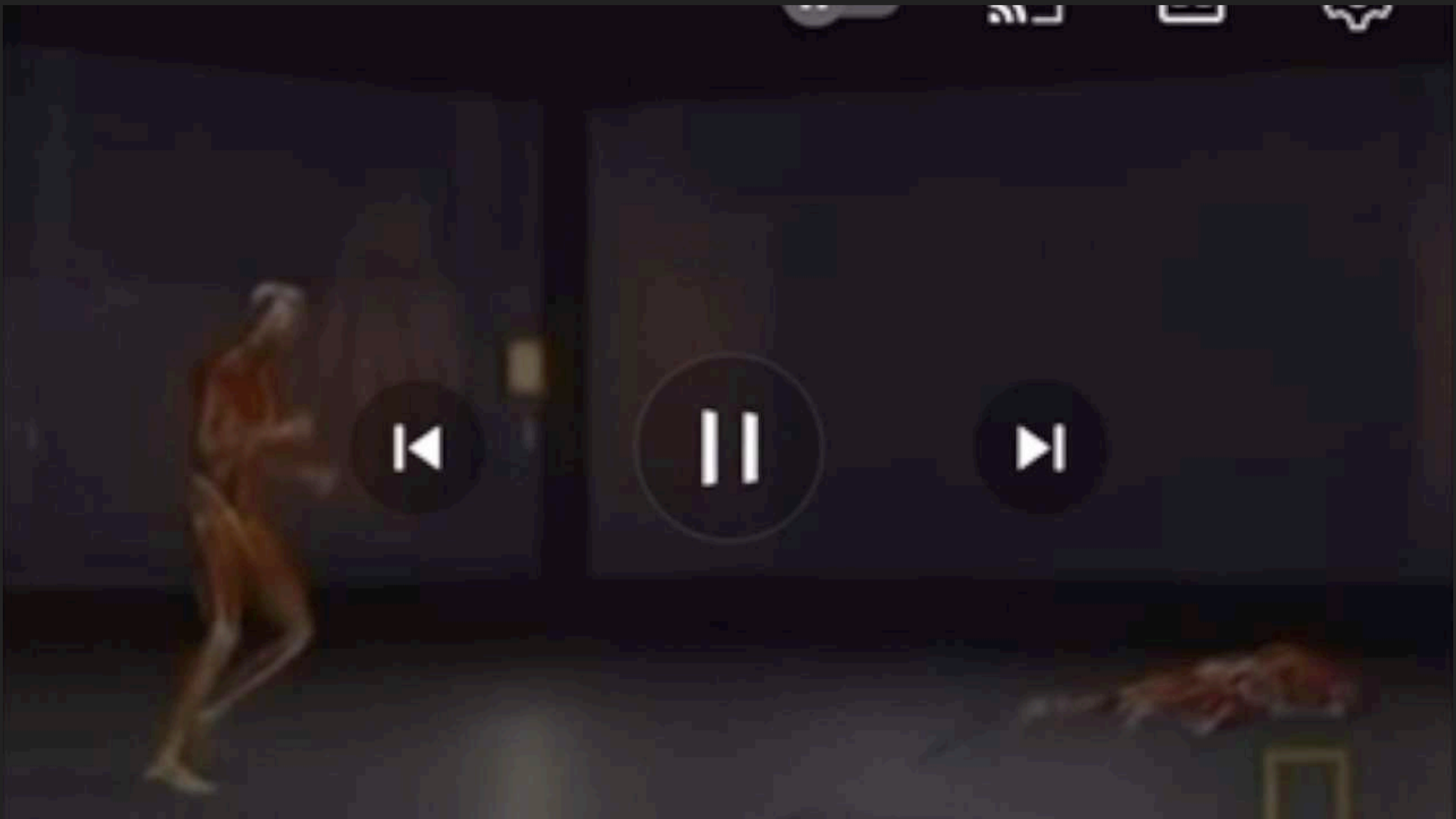
5 PULL

6 ROTATION

7 LOCOMOTION


NOPE!


ZONE
ALLOW YOURSELF TO BE CHALLENGED
A journey of a
thousand miles
begins with a
single step



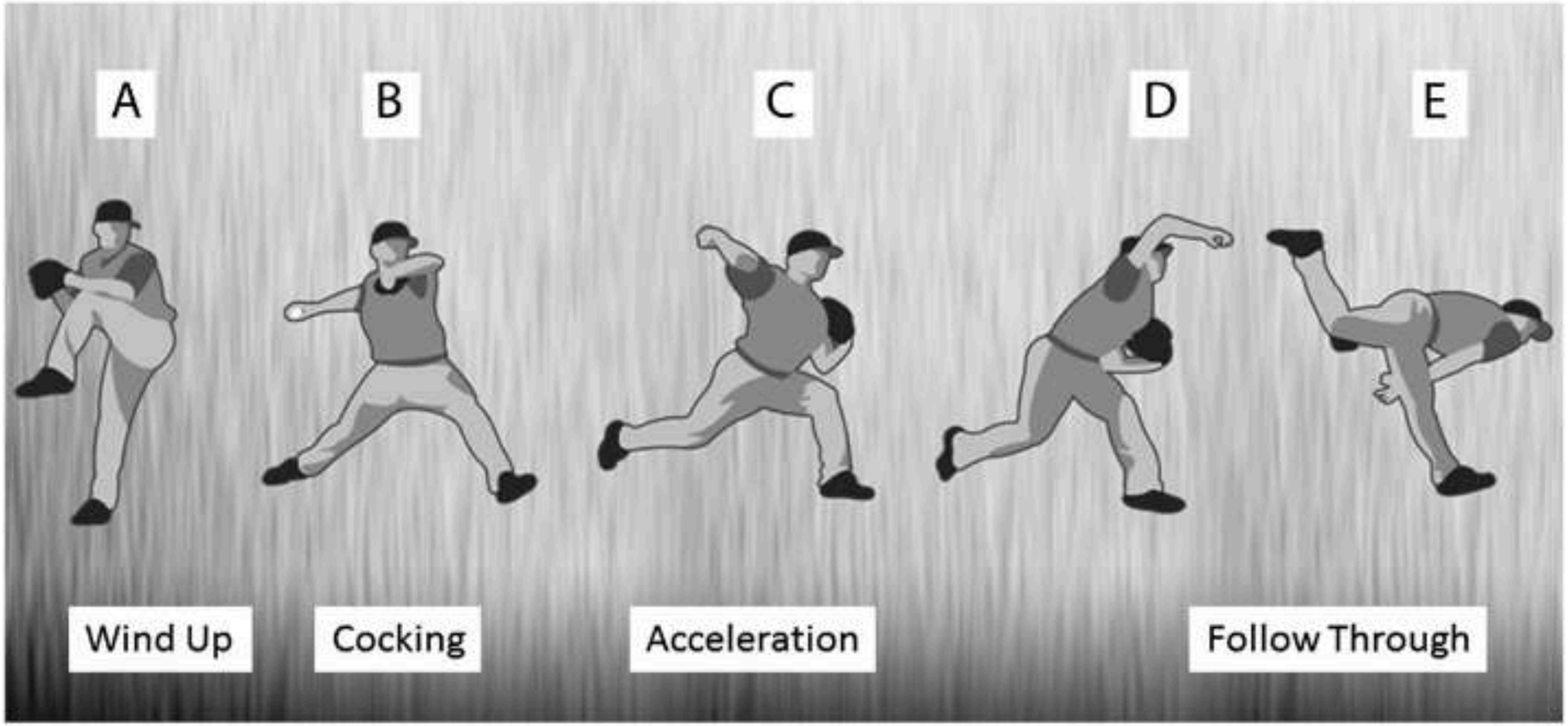
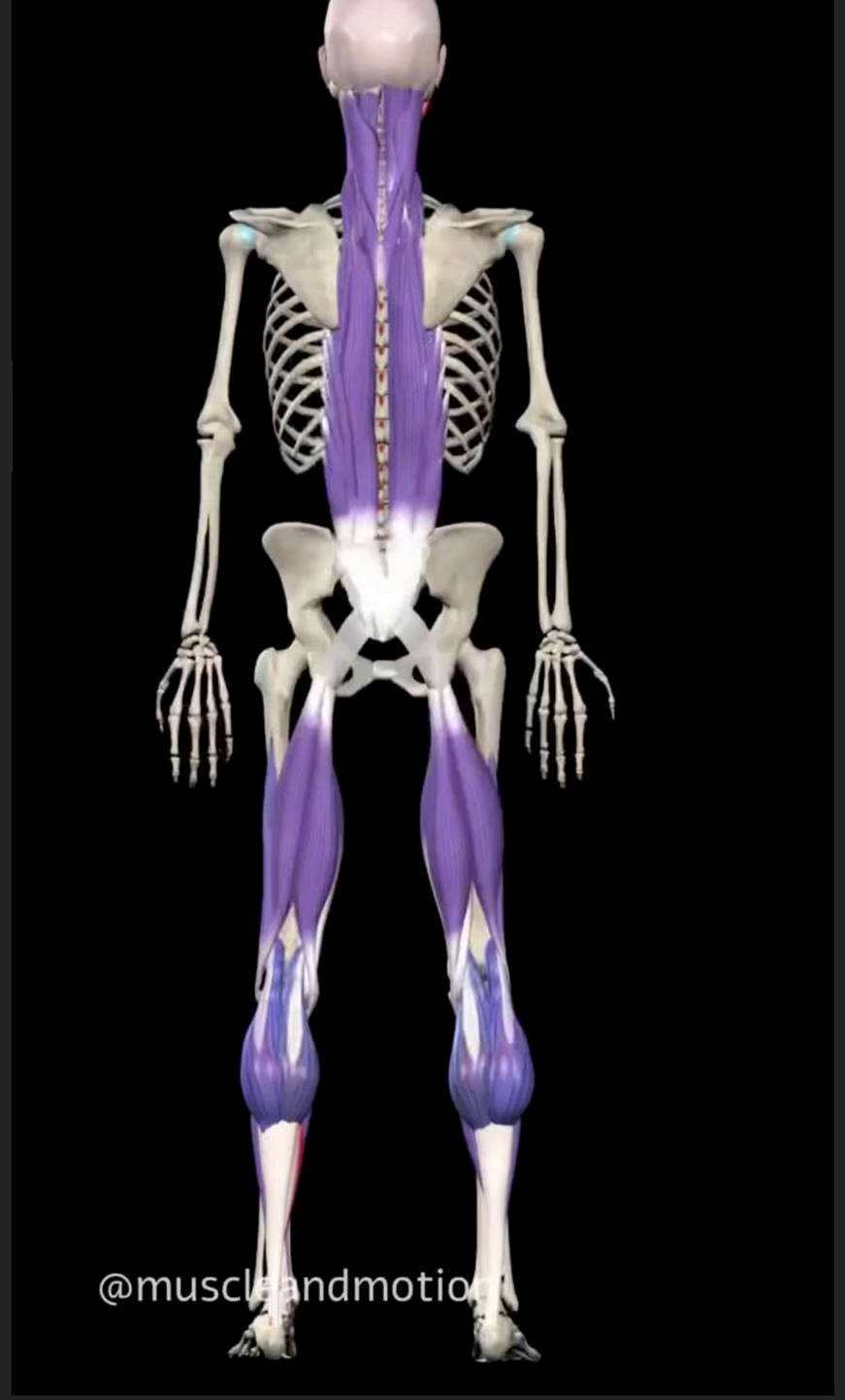
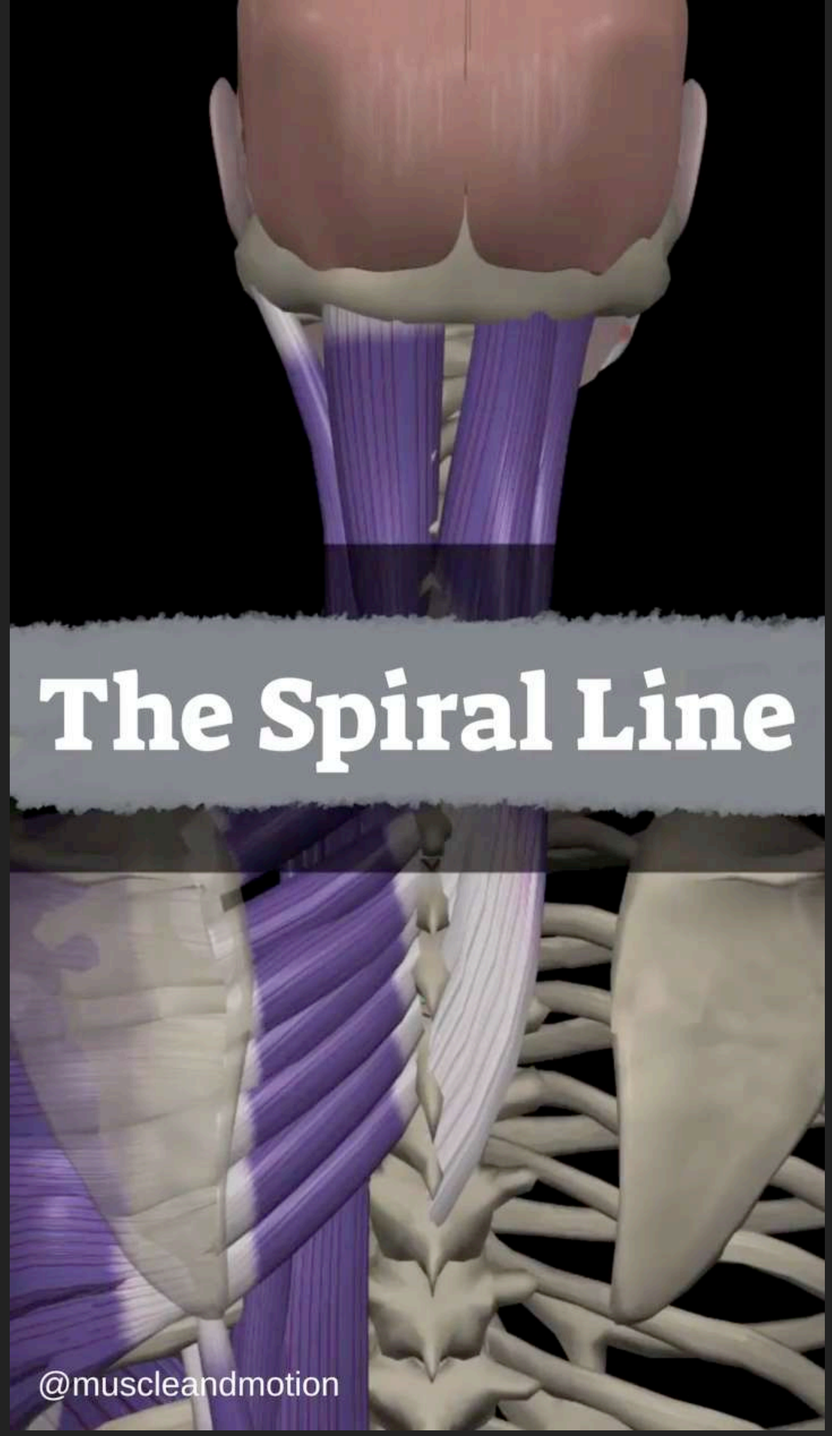
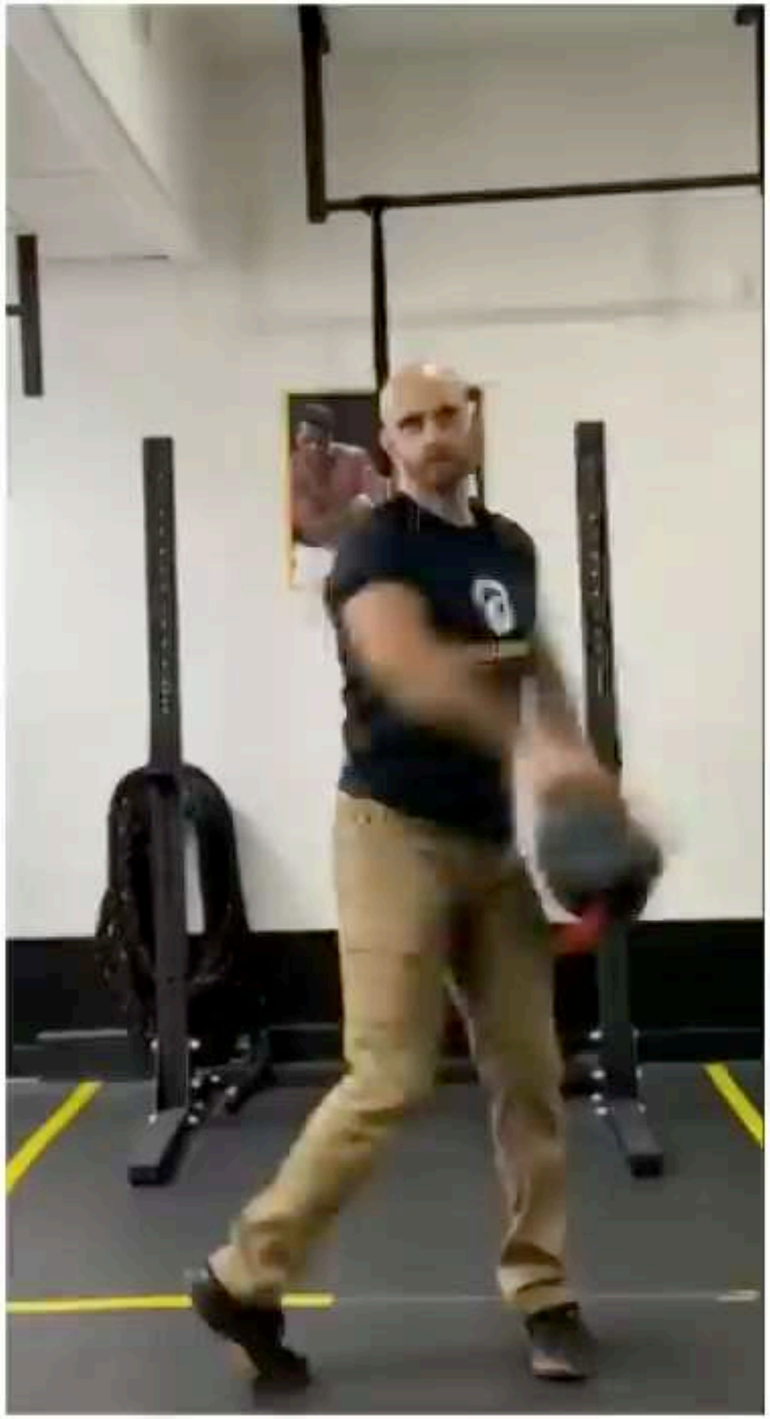


Figure 1. Notice that there is little "twisting" of the core during the entire pitching motion beginning at wind up; the core is actually "stiffened" during the cocking and acceleration phases. This stiffening allows the serape muscle and other tissues to transfer the serape's "hip power" to the shoulders and eventually the hand all the way to the follow through.

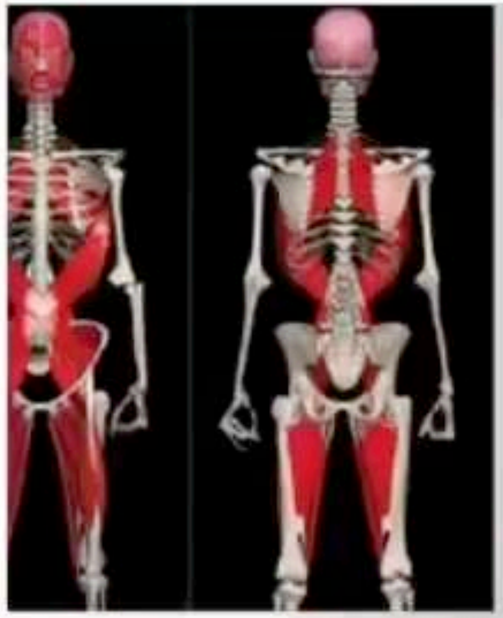

横のアーチ
「横行アーチ」
across arch
"transverse arch"
inner arch
"medial longitudinal arch"
内側のアーチ
「内側縦アーチ」
outter arch
"lateral longitudinal arch"
外側のアーチ
「外側縦アーチ」


@muscleandmotion


The Spiral Line
@muscleandmotion




External
Obliques
Adductor
complex



ANTERIOR SERA

- Right Hip Flexo
- Right Adductor
- Right Internal C
- Left External Ob
- Left Serratus An
- Left Rhomboid
- Right Rhomboi
- Right Serratus A
- Right External C
- Left Internal Ob
- Left Adductors
- Left Hip Flexors

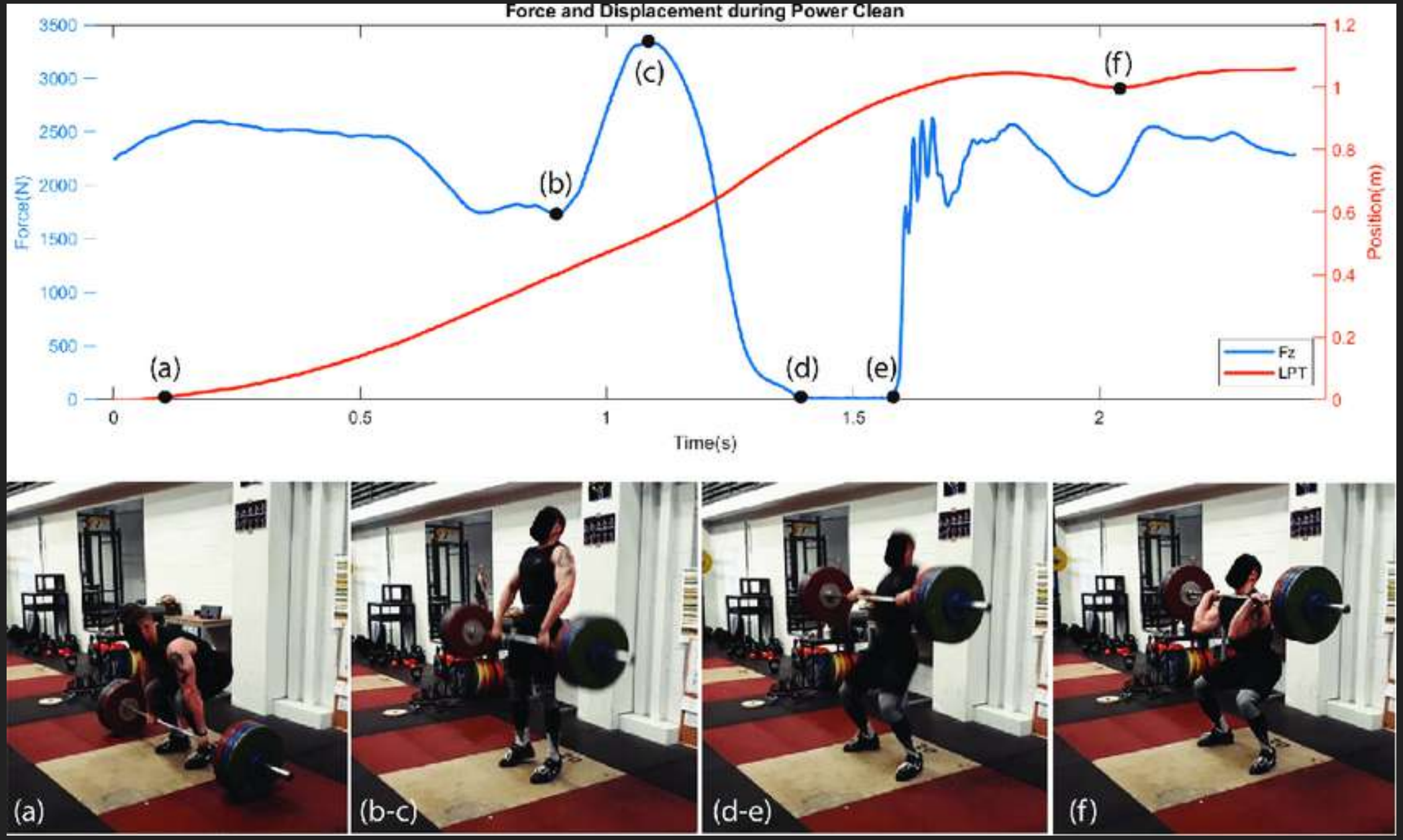
POSTERIOR SERAPI

POSTERIOR SI

- Right Gastro
- Right Hamst
- Right glutes
- Left Latissim
- Left Pectoral
- Right Pector
- Right Latissi
- Left Glutes
- Left Hamstri
- Left Gastroc,

HOW DID WE GET HERE?

- ニュートンの第三法則によると、いわゆる床反力は、身体に接している地面によってもたらされる力である。ある人がただ立っている時、床反力は、その人の体重と一致する。身体が動いている時には、床反力は加速力のために増加する。


Force and Displacement during Power Clean
Force(N)
Position(m)
Time(s)
(a)
(b)
(c)
(d)
(e)
(f)
Fz
LPT
(a)
(b-c)
(d-e)
(f)


make you TIRED,
can make you BETTER!

- 足のスタビリティ
- 多面的な股関節トレーニング
- 片脚での加速トレーニング＆減速トレーニング
- 様々な方法でプログレッションが可能...
- ステップの高さ
- ステップの方向
- 様々なポジションでのローディング

Classification	Level of activation	Exercise	Average (%MVIC)
1º	Very high	Step-Up	169.22 ± 101.47
2°	Very high	Lateral Step-Up	114.25 ± 54.74
3°	Very high	Diagonal Step-Up	113.21 ± 43.54
4°	Very high	Crossover Step-up	104.19 ± 33.63
5°	Very high	Hex Bar Deadlift	88 ± 16
6°	Very high	Rotation Barbell Hip Thrust	86.18 ± 34.3
7°	Very high	Traditional Barbell Hip Thrust	82.37 ± 18.65 (Lower GM: 69.5/Upper GM: 86.7)

Table 6. RMS EMG data for the gluteus medius (GMD) during the eccentric (ECC) and concentric (CON) phases of the 4 study exercises. (N=14)

	Step-Up	Lunge	Deadlift	Squat
GMD ECC	0.56 ± 0.27[a]	0.55 ± 0.30[a]	0.25 ± 0.09[b]	0.23 ± 0.11[b]
GMD CON	0.85 ± 0.27[a]	0.84 ± 0.35[a]	0.56 ± 0.34[b]	0.38 ± 0.15[b]

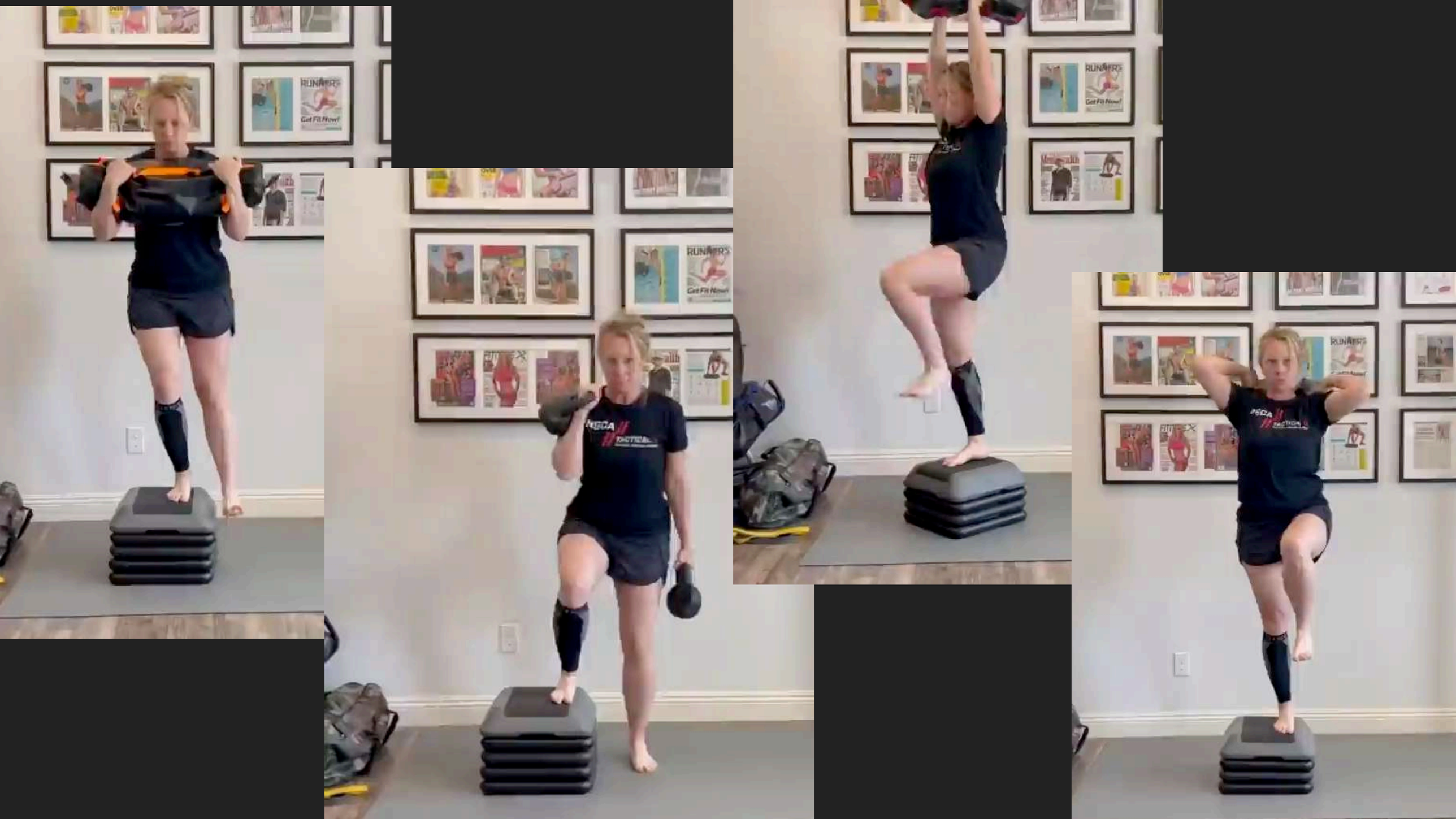
a = significantly different than S and DL ($p \leq 0.001$); b = significantly different than SU and L ($p \leq 0.001$)

Table 7. RMS EMG data for the gluteus maximus (GMX) during the eccentric (ECC) and concentric (CON) phases of the 4 study exercises. (N=14)

	Lunge	Step-Up	Deadlift	Squat
GMX ECC	0.95 ± 0.45[a]	0.87 ± 0.31	0.76 ± 0.36[b]	0.62 ± 0.34[b]
	Step Up	Lunge	Deadlift	Squat
GMX CON	1.99 ± 0.91[c]	1.88 ± 0.69[c]	1.79 ± 0.88[c]	1.18 ± 0.50[d]


mal Movement Patterns
2
3
4
5
6
7


Primal Movement Patterns
1
2
3
4
5
6
7


RUNNER'S
Get Fit Now!


Lateral Lunge

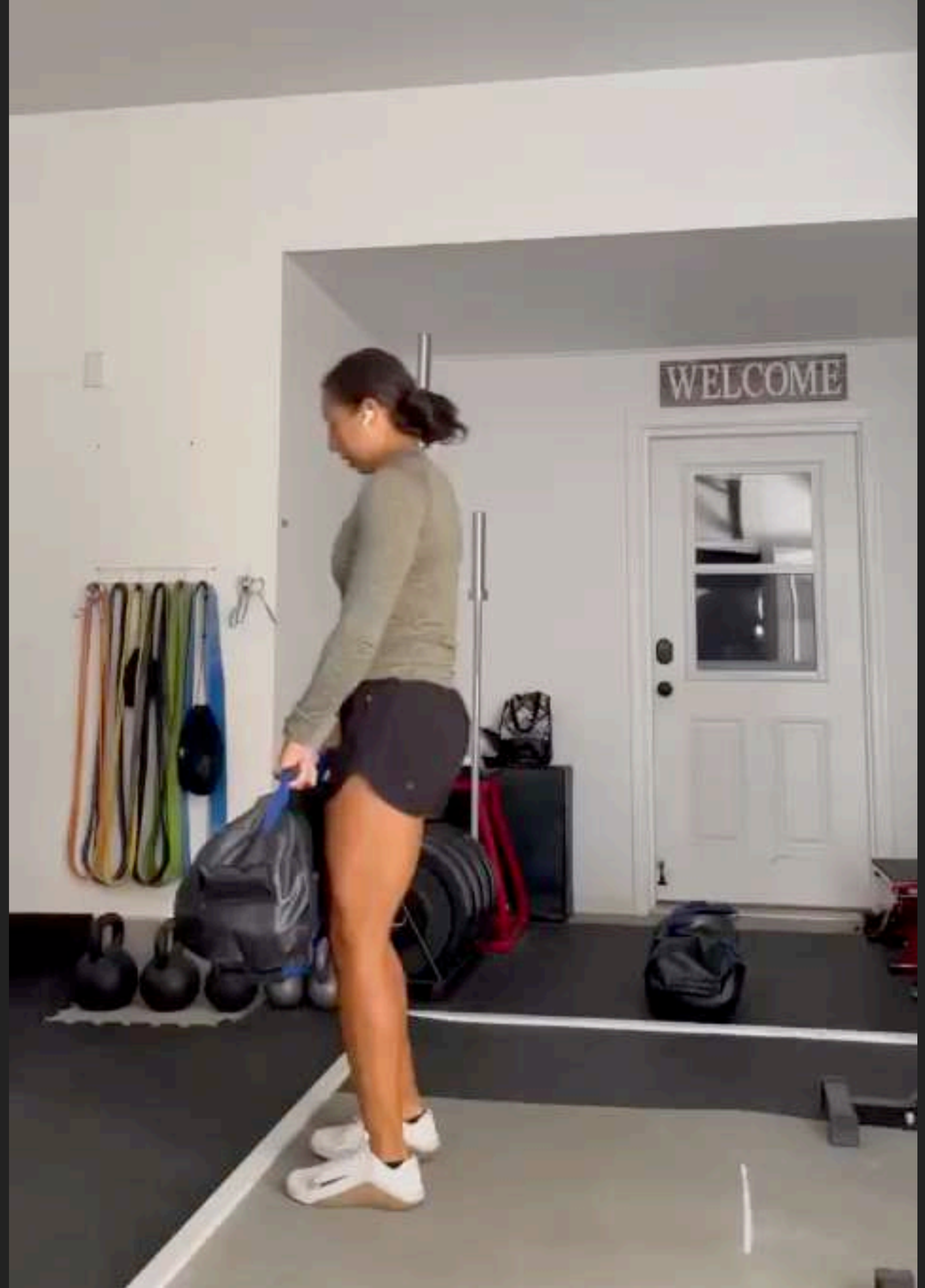

Lateral Squat


Get Fit Now!
INFINITY TRAINER


EQUINOX


XC getting after their Fall Break
Lift!!

EXIT
31


WELCOME

持ち帰るべきポイント

- パワーはアスリートに限定されるものではないが、ここで提供した基礎の多くはアスリートにも使用できる。
- パワーの神経学的デマンドのために、パワーエクササイズはウォームアップ後、ワークアウトの早めのタイミングで行われるべきであり、特に最初に学び始める時期においては疲弊するまでトレーニングすべきではない。
- より安定した環境においてより良く動くことを学ぶことからスタートして、そしてそれからそのポジションでいかに負荷を加速するかを学ぶ。
- より良いレジリエンスの構築を助ける減速負荷と変数要素を認識すること。
- スピードは不安定性を増加させるため、スピードは最後のプログレッションの一つとして活用すること。
- カヌーの上から大砲を発射しようとしても上手くは行かない。より良いプログレッションを構築するシステムを持つこと。
- パワーは健康及びフィットネスに関わる多くの利点を提供し得るのでプログラミングに関して考慮すること。

THANK YOU!