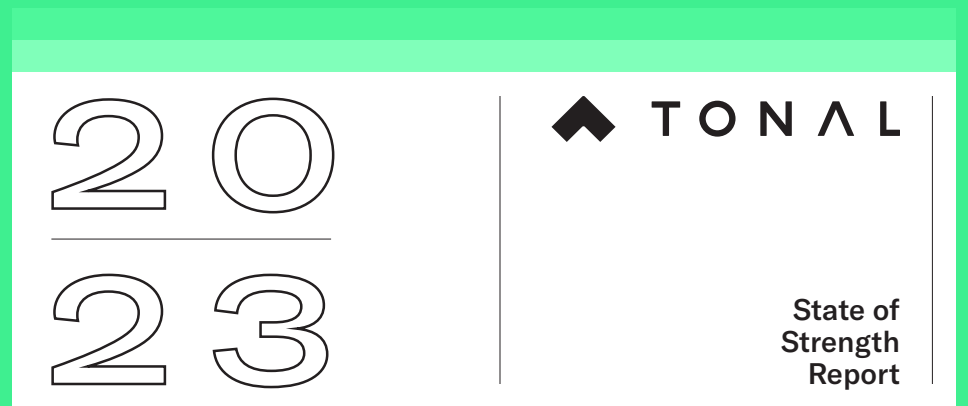


State of Strength



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01

Methodology



The Tonal State of Strength report relies on the workout data of more than 175,000 anonymized Tonal members who worked out at least 12 times for a minimum of three minutes with resistance on Tonal in the 12-month period between October 1, 2022, and October 1, 2023. All of the data in this report was passively collected during the same time period.*

Guest and demo users were not included in the data set. Members self-reported their age, gender, weight, height, and zip code. Unrealistic and/or extreme outliers for age, weight, and height were removed from the data set to prevent skewing the results.

Unlike a randomized controlled trial, State of Strength summarizes observations of the workout data and survey responses from members on their exercise choices in real-world conditions over the course of one year.** While the majority of scientific publications only report on male physiology¹ or limit their participants to a specific age range, the population featured here is 41 percent female, and 20 percent are over the age of 50.

GENDER	
Male	59.3%
Female	40.7%
Non-Binary	0.1% ²

AGE	
Under 20	7.7%
20-30	10.3%
30-40	31.2%
40-50	30.5%
50-60	14.6%
60-70	4.8%
70-80	1%
Over 80	0.1% ²

*The primary data set is supplemented with a second data set of more than 120,000 Tonal members who were active as of October 1, 2023. This data looks at workouts completed from October 1, 2022, to October 1, 2023, and information drawn from this data set is noted in the appendix. Active members are defined here as those who completed at least one workout in the past 30 days (as of October 1, 2023), worked out a minimum of three workouts on Tonal, and had a weekly consistency above 5 percent.

**Survey responses were collected from an online survey completed by 223 members of the Official Tonal Community on Facebook between October 31 and November 7, 2023.

Defining Strength:

Changes in strength are measured by Tonal's proprietary Strength Score metric, which tracks total body, and body region, strength based on your estimated one-rep max for more than 150 different exercises.

Defining Consistency:

Consistency is measured as the percentage of weeks with at least one workout over the course of the assessed time period.

Defining Power:

Power is the ability to overcome resistance in the shortest period of time. Peak power is the maximum value of force multiplied by velocity during a given movement.



02

Executive Summary



The World's Largest Data Set on Strength Training

With more than 175,000 unique users lifting over 66 billion pounds in more than 10 million workouts over the course of one year, Tonal's membership makes up the world's largest strength training data set.

After analyzing this observational data, which includes women and men of all ages from across America, the state of strength training in 2023 is clear: resistance training, once considered a niche pursuit, is now a daily priority for more people than ever before. Tonal's world-class coaches and performance experts are also looking ahead to predict how the fitness industry will evolve in 2024 and beyond.





Here are the top trends:

01

Adults aged 55 and older are embracing strength training.

02

Women are breaking barriers and lifting heavy.

03

Despite all the benefits of lower-body exercise, lifters are still skipping leg day.

04

Consistency counts—and small tweaks can make you more consistent.



03

Introduction



The Democratization of Strength

Strength training was once considered the exclusive purview of muscle-bound, typically male athletes. The language of the weight room was nearly indecipherable to outsiders, and many felt intimidated to enter these temples to the chiseled human form.

Fortunately, those days are gone. With more information on the benefits of resistance training available now—from healthier joints³ to improved mental health^{4,5}—and an increased willingness to debunk old myths—no, strength training won't make you “bulky”—people from all different backgrounds are picking up weights as part of their regular training.

66B

Members lifted more than 66 billion pounds...

10M

...in more than 10 million workouts in a year.

This democratization of strength training is clearly evident among Tonal members. From small towns to big cities, coast to coast, and everywhere in between, Tonal members are discovering resistance training is truly for everyone, regardless of gender, age, or prior experience.

This report analyzes the activity of Tonal members across the country over the course of one year. During that time period, they lifted more than 66 billion pounds in 10 million-plus workouts. This isn't, however, a lab study that focuses on a small group of participants under strictly controlled conditions.



The United States of Strength: Each dot represents one zip code with a Tonal.



Rather, it is an observational, sweeping panorama of how thousands of people choose to include fitness in their daily lives.

By analyzing the data, certain trends emerge. Women and adults over 55 are lifting heavy and breaking down the stereotype of what a typical weightlifter looks like. Consistency remains the not-so-secret sauce for achieving big results, and, despite the proliferation of memes⁶ and experts begging lifters not to, many are still skipping leg day.

The increased adoption of strength training has improved the quality of life for many, but the fitness industry still has problems to solve and questions to answer. There are new opportunities and challenges ahead, including the rise of artificial intelligence, GLP-1 agonist weight loss drugs, and widespread misinformation from uncredentialed social media influencers.

In this report, you'll find a breakdown of each trend. Plus, Tonal's world-class experts reveal their predictions for the future of strength training and illustrate a path forward for an industry that's constantly evolving.



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Trends

08





01

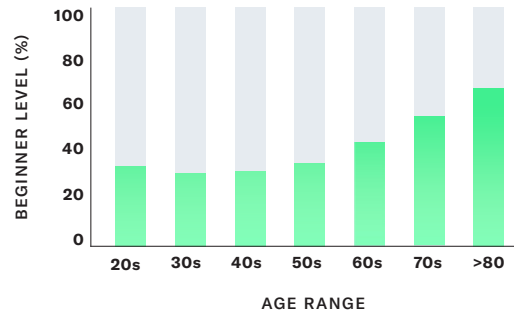
It's Never Too Late to Lift

Strength training isn't just for the young. Data shows that adults in their 50s and older are lifting heavy and reaping big rewards. And for good reason: Recent research suggests that resistance training is integral to healthy aging as it builds muscle,⁷ promotes joint health,⁸ helps preserve bone mineral density,⁹ and is linked to a reduced likelihood of cardiovascular disease¹⁰ and certain cancers.¹¹

Older Tonal members are concentrating on functional movements that translate to a better quality of life and improved performance in recreational sports. "Training is about building and maintaining a body that lets you do all the things you want to do and feel good doing it," says Tonal Coach Kristina Centenari.

Start Where You Are

New to lifting? No sweat. You can still enjoy the benefits of strength training. In fact, older Tonal members were more likely than other age groups to identify as beginners, proving it's never too late to start.



Use It Or Lose It

Age-related muscle loss, or sarcopenia, can start as early as your 30s¹², but strength training slows the decline.

73%

Tonal members over 55 increased their strength by an average of 73 percent in their first year on Tonal.

12%

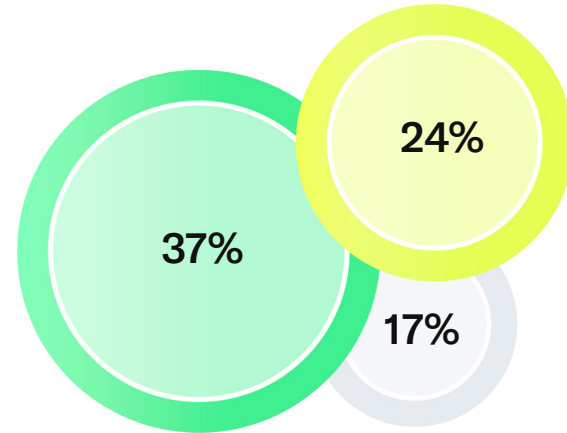
Older members are also 12 percent more consistent than younger age groups.

Power Up

Training for power, or the ability to overcome resistance quickly, improves performance in older adults.¹³ Members over 55 averaged a **25 percent increase in peak power** in deadlifts.

Train for Life

Older members are taking a holistic approach to fitness. They were more likely to choose improving fitness as their primary goal, over building muscle or getting lean. Here are their top three reasons for working out:



- Live a longer, healthier life
- Improve overall fitness
- Gain muscle

Build Functional Muscle

Older adults know that strength training is about more than just developing "mirror muscles." They're focused on functional exercises, core stability, and mobility.

TOP 5 EXERCISES FOR 55+¹⁴

- 1 | Standing Pallof Press
- 2 | Internal Shoulder Rotation
- 3 | Seated Lat Pulldown
- 4 | External Shoulder Rotation
- 5 | Standing Chop

60



11,976,334,178

Total Pounds Lifted by Women in One Year

010



02

Women Are Breaking Barriers and Lifting Heavy

The old myth about “bulking up” has been shut down, as women today are embracing strength training for benefits ranging from improved body composition to better mental health. Even with so many workout modality options available to them including yoga, barre, high-intensity interval training, Pilates, and dance cardio, women still choose strength training workouts 62 percent of the time on Tonal.

Unfortunately, women are still underrepresented in exercise science research. According to a 2020 review, only 8 percent of published studies focused on female physiology!

Overcoming Obstacles

Seventy percent of female members surveyed said they experienced barriers to strength training before Tonal. Here are the top reasons women have avoided lifting weights:

- 1** I needed guidance from a coach or trainer.
- 2** I was intimidated by the weight room in the gym.
- 3** I focused on cardio-based activities.

Big Numbers....

3,431

Bye bye, two-pound dumbbells: Female members lifted an average of 3,431 pounds per workout.

...Equal Big Results

57%

In their first year on Tonal, women increased their overall strength by an average of 57 percent

Better Body Balance

Fifty-eight percent of women ranked full-body workouts as their favorite type of workout compared to just 38 percent of men. The top five moves for women include upper- and lower-body exercises, while men tend to focus on upper-body gains.

MALE	FEMALE
1 Bench Press	1 Goblet Squat
2 Biceps Curl	2 Neutral Grip Deadlift
3 Single-Arm Bent Over Row	3 Bench Press
4 Triceps Extension	4 Single-Arm Bent Over Row
5 Seated Lat Pull Down	5 Biceps Curl

In Their Own Words

Here's how women say they feel after a Tonal workout...



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03

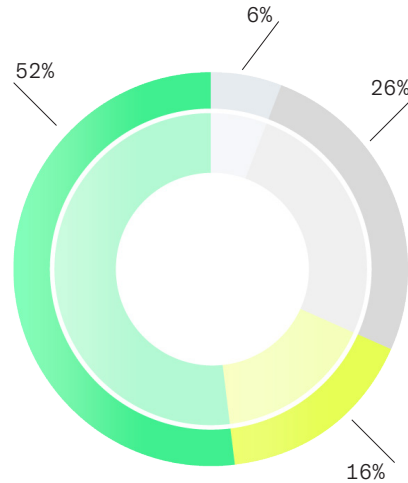
Skipping Leg Day Leaves Huge Gains on the Table

“Squats, deadlifts, and lunges build the foundation for a stronger lower body, while also boosting metabolism and stimulating muscle growth for the entire body. No physique is complete without a strong lower half,” says Tonal Coach Joe Rodonis

Some lifters, though, are still neglecting leg day in their weekly routines. Men tend to do less lower-body work than women and see a bigger gap in strength as a result. Furthermore, members who design their own workouts are more likely to avoid training their legs than those who choose coach-led programs. Bulgarian split squats might not be your idea of a good time, but incorporating more lower-body moves into your workout can have all-around benefits.

Less Love for Legs

Fifty-two percent of members surveyed said lower-body workouts were their **least favorite** type of session. Only 8 percent said they were their favorite.



- Lower-body workouts
- Upper-body workouts
- Core workouts
- Full-body workouts

Exclusion Excuses

Only 39 percent of members reported that they love leg day. For those who avoid it, here are the top three reasons why:

1

I already do a lower-body cardio-based exercise.

2

I want to avoid lower-body soreness.

3

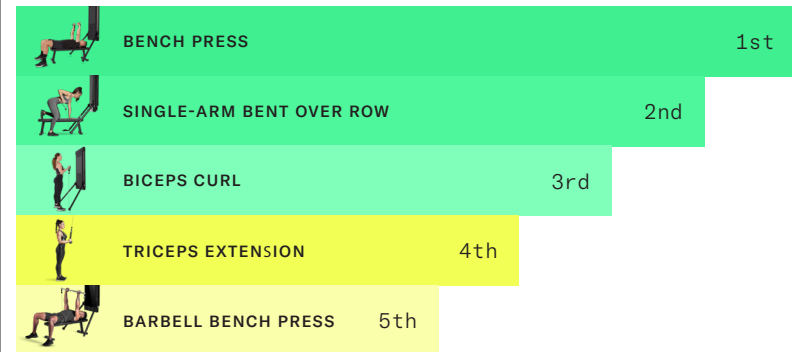
I have pain or an injury in my lower body.

Mind the Gap

On average, upper-body strength is greater than lower-body strength for both men and women. The difference, however, is smaller for women (just 8 percent compared to 34 percent for men), hinting that women are better balancing their training time.

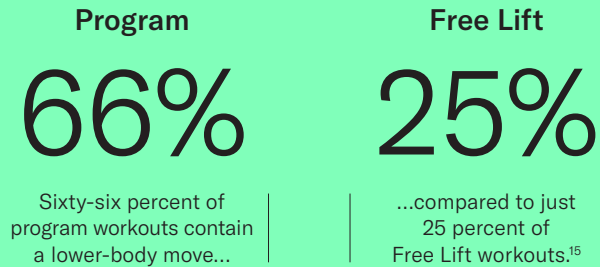
Upper Body on Top

Of the top 10 most popular moves on Tonal, only two are lower-body exercises: the neutral grip deadlift and goblet squat rank 6th and 9th respectively. With the bench press at number one, upper-body exercises reign supreme.



Programs Get a Leg Up

When left to their own devices by building “Free Lift” workouts on Tonal, members are less likely to include lower-body moves in their workouts. That’s where Tonal’s expert-designed, well-balanced programs fit in.



Go Low and Slow

When looking at form feedback data on Tonal’s most popular lower-body exercises (including squats, deadlifts, and lunges), here are two of the most common mistakes members make:

Moving too fast.

Focus on the eccentric contraction in these moves to maximize strength and muscle-building.

Limiting your range of motion.

Sitting deeper into your squats or getting your back knee lower in a lunge can boost lower-body strength.

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04 | Trends





04

A Little Goes a Long Way When It Comes to Consistency

Consistency in your workout routine is essential to seeing results. In fact, consistency is more important for your overall strength than how much time you can devote to each individual workout. When comparing Tonal members with the highest and lowest overall Strength Scores, the duration per workout didn't differ much, but adding one or two workout days per week had a big impact on overall strength.

Fortunately, you don't need a superhuman level of willpower to keep showing up. Small efforts can add up over time, leading to habit formation and goal achievement.

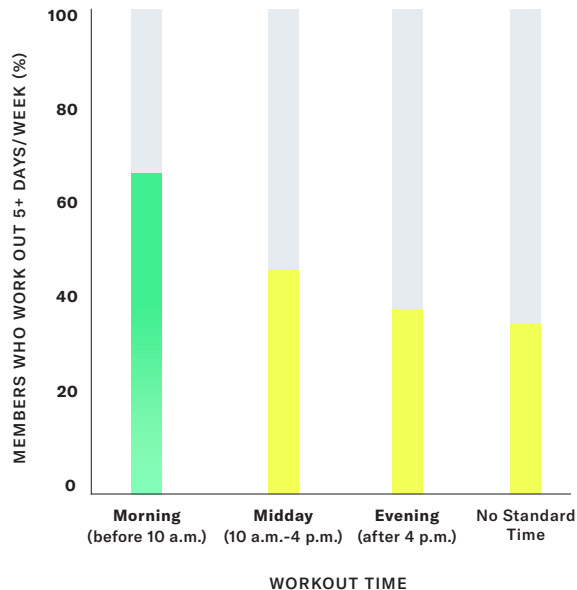
Stick With the Program

12%

Random workouts equal random results: Tonal members who regularly followed programs were almost 12 percent more consistent than those who did one-off workouts more often.

The Early Birds Get to Work

Find a time that works for you and stick with it. Members who regularly worked out within the same three-hour time window were more consistent than those who varied their exercise time. Consistency also peaked in the morning. Members who say they exercise in the morning were more likely to work out five or more days per week than any other group.



Aim Higher

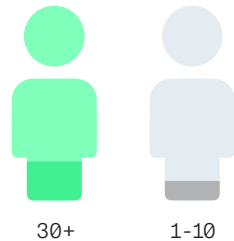
Lofty goals are always a good idea. For each additional day a member aims to work out (up to four days per week) their weekly consistency increases by an average of 15 percent.

SUN	MON	TUES	WED	THURS	FRI	SAT
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

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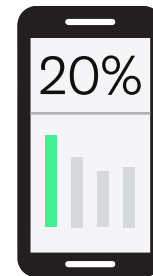
Make It Social

Members who followed more than 30 other people on the Tonal app were 20 percent more consistent than those who didn't follow anyone. Even members with one to 10 friends were 10 percent more consistent.



Celebrate Your Wins

Members who checked their training stats on the Tonal mobile app in the last month were around 20 percent more consistent than those who did not.¹⁵



Every Minute Counts

Even if you're strapped for time, you can benefit from adding a few minutes to your workouts. Members saw increases in consistency with longer workouts, but these returns diminished and plateaued for workouts over 60 minutes.



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Predictions

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01

Body Composition Over Weight Loss

GLP-1 agonist drugs (such as Ozempic) offer a quick path to weight loss—but these medicines aren't a shortcut to fitness, and the long-term side effects are largely unknown. Unless paired with adequate protein intake and resistance training, rapid weight loss may also result in the loss of muscle mass. In one study, lean muscle mass accounted for around 39 percent of total weight loss among participants.¹⁶ This may be detrimental as lower levels of strength are associated with higher all-cause mortality.¹⁷

Weight loss drugs won't replace exercise, but rather, they will highlight the importance of a resistance training routine when it comes to functional fitness, athletic performance, and mental health benefits. Troy Taylor, Senior Director of Performance at Tonal, explains that combining resistance training with these drugs will be critical to patients' long-term success as it may help them avoid the adverse outcomes linked to muscle loss.



By focusing on losing fat over gaining muscle, we're looking at the wrong side of the body composition equation. We're going to start seeing the conversation shift to the quality of weight loss, not just the quantity, with a new emphasis on the metabolic benefits of gaining muscle."

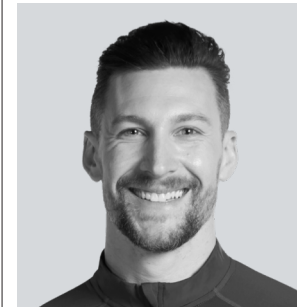
—TONAL COACH TIM LANDICHO

02

Expanded Hybrid Training

Strength training isn't a hard sell anymore. It's common knowledge in the fitness industry that resistance training is essential for all-around health and has the potential to improve body composition even more than cardio. Now, a wider audience is catching on. Hybrid athletes aren't ditching running, yoga, or cycling—they're adding strength to the routine to get the most out of all their activities. That's why gyms, boutique fitness studios, and trainers are also incorporating strength training into popular workouts.

In a survey of Tonal members, 38 percent reported using another form of at-home connected fitness while 35 percent said they also participate in an outdoor activity such as running, walking, cycling, or hiking.



People value diversity and variety in their regimen and activities like running and cycling are entry points to strength training for many. The hybrid athlete sees the value that resistance training, whether it's at home or in a gym, adds to their other athletic pursuits."

—TONAL COACH JOE RODONIS



03

AI Integration

Every day, more and more industries—from education and healthcare to finance and retail—are finding new applications for artificial intelligence and large language models. Fitness is no exception. Regular people now collect and track their data, something that was once a luxury reserved for professional athletes. Artificial intelligence, powered by that data, is developing new capabilities and insights. However, it is limited in its ability to personalize recommendations.

“A coach’s expertise and human touch can help users understand, personalize, and channel those insights into significant results,” explains Josh Shapiro, senior staff data scientist at Tonal. “AI will, in essence, amplify the expertise of coaches out to hundreds of thousands of users at once.”



While AI won’t replace personal trainers anytime soon, it will serve as a valuable resource for creating programming and freeing up coaches to focus on the human elements of training that can’t be replicated by a machine.”

— TONAL COACH ASH WILKING

04

Science on Social

Toning shoes, shaking weights, and boot camps that push you to give 100 percent, 100 percent of the time: Fitness fads make big promises, each one claiming to be the best method for helping you lose fat or gain strength. But these fads tend to fizzle out just as quickly as they emerge. Typically, this is because they aren’t based on science.

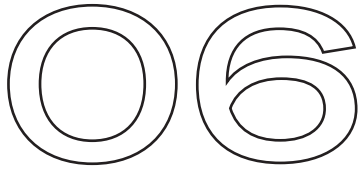
Social media has been a breeding ground for fads because the barrier to entry is so low. Anyone can become an influencer, even if they lack any credentials, education, or training. As people become disillusioned with uncredentialed influencers, misleading filters, and AI-generated images that promise unrealistic results, they’re demanding higher standards for content.



Social media is how a lot of knowledge gets to the public and evidence-based practitioners are starting to come to the forefront. Some of the most popular people now, with six-figure followings, are resistance training experts who have PhDs or PhD-level experience.”

— TROY TAYLOR, SENIOR DIRECTOR OF PERFORMANCE AT TONAL





Appendix

1. "Studies exclusively in female participants account for 8% of published studies involving human participants and tend to relate to aspects particular to the female sex (pregnancy, menopause, reproductive disease), with some exceptions. There are 3 times as many single-sex studies in males compared with females within the 3-year period of review." O'Halloran, K.D. "Mind the Gap: Widening the Demographic to Establish New Norms in Human Physiology." *The Journal of Physiology*. J Physiol, 07 May 2020, 598: 3045-3047. <https://doi.org/10.1113/JP279986>.
2. Not all percentages sum to 100% due to rounding.
3. Turner MN, Hernandez DO, Cade W, Emerson CP, Reynolds JM, Best TM. "The Role of Resistance Training Dosing on Pain and Physical Function in Individuals With Knee Osteoarthritis: A Systematic Review." *Sports Health* 2020 Mar/Apr;12(2):200-206. <https://doi.org/10.1177/1941738119887183>.
4. Gordon, B.R., McDowell, C.P., Lyons, M. et al. "Resistance Exercise Training for Anxiety and Worry Symptoms Among Young Adults: A Randomized Controlled Trial." *Scientific Reports* 10, 17548 (2020). <https://doi.org/10.1038/s41598-020-74608-6>.
5. Gordon BR, McDowell CP, Hallgren M, Meyer JD, Lyons M, Herring MP. "Association of Efficacy of Resistance Exercise Training With Depressive Symptoms: Meta-Analysis and Meta-Regression Analysis of Randomized Clinical Trials." *JAMA Psychiatry* 2018 Jun 1;75(6):566-576. <https://doi.org/10.1001/jamapsychiatry.2018.0572>.
6. [EPFitness.com "Don't Skip Leg Day."](https://www.epfitness.com/dont-skip-leg-day/)
7. Chen, N., He, X., Feng, Y. et al. "Effects of Resistance Training in Healthy Older people with Sarcopenia: A Systematic Review and Meta-Analysis of Randomized Controlled Trials." *European Review of Aging and Physical Activity* 18, 23 (2021). <https://doi.org/10.1186/s11556-021-00277-7>.
8. Latham N, Liu CJ. "Strength Training in Older Adults: The Benefits for Osteoarthritis." *Clinics in Geriatric Medicine* 2010 Aug;26(3):445-59. <https://doi.org/10.1016/j.cger.2010.03.006>
9. O'Bryan, S. J., Giuliano, C., Woessner, M. N., Vogrin, S., Smith, C., Duque, G., & Levinger, I. "Progressive Resistance Training for Concomitant Increases in Muscle Strength and Bone Mineral Density in Older Adults: A Systematic Review and Meta-Analysis." *Sports Medicine* (Auckland, N.Z.), 2022. 52(8), 1939–1960. <https://doi.org/10.1007/s40279-022-01675-2>.
10. Liu, Yanghui, Lee, Duck-chul, Li, Yehua, Zhu, Weicheng, Zhang, Riquan, Sui, Xuemei, Lavie, Carl J., Blair, Steven N. "Associations of Resistance Exercise with Cardiovascular Disease Morbidity and Mortality." *Medicine & Science In Sports & Exercise* 51(3) March 2019. 499-508. <http://dx.doi.org/10.1249/MSS.0000000000001822>.
11. Mazzilli, Kaitlyn M., Matthews, Charles E., Salerno, Elizabeth A., Moore, Steven C. "Weight Training and Risk of 10 Common Types of Cancer." *Medicine & Science In Sports & Exercise* 51(9) September 2019. 1845-1851. <http://dx.doi.org/10.1249/MSS.0000000000001987>.
12. Volpi, E., Nazemi, R., & Fujita, S. "Muscle Tissue Changes with Aging" *Current Opinion in Clinical Nutrition and Metabolic Care* 2004 7(4), 405–410. <https://doi.org/10.1097/01.mco.0000134362.76653.b2>.
13. El Hadouchi M, Kiers H, de Vries R, Veenhof C, van Dieën J. "Effectiveness of Power Training Compared to Strength Training in Older Adults: A Systematic Review and Meta-Analysis." *European Review of Aging and Physical Activity* 2022 Aug 11;19(1):18. <https://doi.org/10.1186/s11556-022-00297-x>.
14. These are the top five moves performed by members over 55 relative to members under 55.
15. This data is drawn from the secondary data set.
16. Wilding JPH, Batterham RL, Calanna S, Davies M, Van Gaal LF, Lingvay I, McGowan BM, Rosenstock J, Tran MTD, Wadden TA, Wharton S, Yokote K, Zeuthen N, Kushner RF, STEP 1 Study Group. "Once-Weekly Semaglutide in Adults with Overweight or Obesity." *New England Journal of Medicine*. 2021 Mar 18;384(11):989-1002. <https://doi.org/10.1056/nejmoa2032183>.
17. García-Hermoso A, Caverro-Redondo I, Ramírez-Vélez R, Ruiz JR, Ortega FB, Lee DC, Martínez-Vizcaino V. "Muscular Strength as a Predictor of All-Cause Mortality in an Apparently Healthy Population: A Systematic Review and Meta-Analysis of Data From Approximately 2 Million Men and Women." *Archives of Physical Medicine and Rehabilitation* 2018 Oct;99(10):2100-2113.e5. <https://doi.org/10.1016/j.apmr.2018.01.008>.

