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# The Silver Bullet to Reversing the Effects of Aging and Improving Health and Vitality

Researched and written by: **R. Bruce Stapleton**, *President and CEO, The Lifegevity Institute.*

Research, validation and testing assistance from **Danielle Fresch**, *BS, AFAA*; **Doratheia Fortener**, *M.A., Kirsten Harrell, Ph.D.*; **Rachel Trevethan**, *MS, RD, LD*; **Ward Blair**, *MD*; **John Harvey**, *Ph.D.*

Edited by: **Jim Good**, *Senior Wellness Editor, The Lifegevity Institute.*

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Aging is a fact of life; however, the evidence of an 18-month study is clear – how fast people age is under their direct control. An individual can dramatically improve health and vitality and reverse the effects of aging by following his or her personal formula that addresses the root causes of aging. The analysis concludes that exercise and dieting alone are not the answer to improved health and vitality. Actions such as taking supplements or medications to address symptoms and short-term solutions for “looking good” do not target the root cause and therefore are not effective and do little to improve overall health.

This improvement is based on following the methodology of the Lifegevity® Program<sup>1</sup> that defines individual prescriptions for good health. It includes the proper mix and intensity of training in the areas of relaxation, exercise, nutrition, life purpose, assertiveness, socialization, change management and self-worth.

The results demonstrated that a person could average an improvement of five days for every day he or she stayed in the program. A 5:1 return for taking care of oneself provides the motivation and adherence not normally seen in today’s society. The average improvement in body age (the age your body feels it is versus your chronological age) was 8.1 years within six months.

The quantitative results of the 250 individuals analyzed are consistent with the clinical findings of the Canadian Institute of Stress (CIS) in which the core methodology of this analysis is based.<sup>2</sup> Dr. Hans Selye, the father of stress management, and the CIS through their research, achieved an average improvement in body age of 11.4 years in eight months.

Exercise, which is typically rated as the cure-all for improved health and vitality, only showed significant improvements in stress-related and body-age measures when combined with an overall strategy for managing stress. As stated by the American Heart Association, “The message from the nation’s scientists is clear, unequivocal and unified: physical inactivity is a risk factor for cardiovascular disease.”<sup>3</sup> Exercise is important; however, it does not provide the significant overall health related benefits unless it is done in conjunction with a total

program. A lack of results from just exercising could be one of the reasons so many people begin exercise programs and quit after a very short period of time.

The problem with most of the studies to date is their focus on one modality or technique. Exercise can improve overall health if done correctly and in conjunction with other techniques. Relaxation, for example, was proven by the Canadian Institute of Stress to have more of an impact on health than exercise when each was done independently.

As an analogy, picture a car sitting at a stoplight. One foot is on the brake and the other foot has the accelerator pushed to the floor. When you release the foot off the brake you begin to release the energy that was being held back. This is what exercise does. You expend energy and therefore feel better. But, what will happen if you never let the foot off of the accelerator? You will burn out the engine. This is similar to the life of a Type A, highly stressed person. Exercise will not totally prevent the heart attack or cure the deprived immune system from constant strain and overwork. Only relaxation can teach the person how to get the foot off the accelerator to control and harness that energy supply.

## Methodology

The methodology of the Lifegevity® Program is based on developing a comprehensive program to reduce the effects of aging, prevent cancer and heart disease and improve overall health and vitality. The initial research tested different modalities and techniques targeting preventive health and fitness improvements for adults over 40. Based on this preliminary research and testing<sup>4</sup>, the following interventions were considered critical to overall health improvement and life enjoyment:

- **Aerobic conditioning** – addressed improved health through increased energy efficiency and endurance and decrease in heart disease
- **Flexibility** – improved muscular balance and range of motion critical to balance and motor control and pain reduction due to arthritis or lower back pain
- **Mind/body integration** – neuromuscular coordination to maintain fluidity in movement, greater awareness of self and increased breathing capacity
- **Strength/Power** – critical to maintaining body posture and reducing the effects of osteoporosis and osteoarthritis

- **Stress management interventions** to reduce the effects of the stress response that causes the general adaptation syndrome and increases the probability for heart disease and cancer

The methodology was then validated through the research and integration of the best methods that addressed each of the required interventions. The primary research and studies included:

- American Heart Association and Framingham Heart Study<sup>5</sup>
- Harvard Cancer Prevention Study<sup>6</sup>
- Canadian Institute of Stress Body Age Study
- Research on Aging and Exercise<sup>7</sup>
- Polar heart rate monitoring research<sup>8</sup>
- Contrology theory and practice developed by Joseph Pilates, including training curriculum developed by Moira Stott<sup>9</sup>
- Alexander Technique theory and practice developed by Mathias Alexander<sup>10</sup>
- Relaxation response based on published research by Dr. John Harvey<sup>11</sup>
- Arthritis prevention and pain reduction research conducted and published by the Arthritis Foundation
- Health and Fitness Appraisal Analysis developed by the American College of Sports Medicine<sup>12</sup>
- Curriculum of the American Senior Fitness Association<sup>13</sup>

The research was integrated with practices and techniques used at Elan Vital's facility to develop a stress profile, health-appraisal tool and the program curriculum.

### Initial Assessment

The assessment tool integrated the body age and stress profiles developed through the work of the Canadian Institute of Stress (CIS) and standard health appraisal and fitness-related variables. Each assessment measure was compared against normative data as published by the ACSM<sup>14</sup> or received from CIS based on the licensing agreement. The assessment variables measured and recorded include:

- Body age as compared to chronological age (based on biological measures including systolic blood pressure, reaction time, near-vision blurring and resting heart rate)
- Lifegevity<sup>®</sup> Stress score – defines level of stress and probability for heart disease and cancer based on survey responses, including identification of total stress score, stress profiles and top three intervention programs based on the profiles (interventions include: exercise, nutrition, life direction and goals, communication/assertiveness and relaxation)

- Physical Activity Readiness – based on Canadian PAR-Q survey responses
- Physical activity and work-related activity
- Blood pressure
- VO2max – sub-maximal stress test based on Technogym protocol
- Flexibility – sit and reach test
- Upper and lower body strength – one repetition maximum protocol using Technogym lateral pulldown, leg extension and leg curl.
- Body composition – includes body fat, BMI and waist/hip ratio based on bioimpedance or skinfold calipers
- Caloric expenditure – based on Harris Benedict equation

The assessment data was collected during the initial meeting with the client and included a goals survey and medical questionnaire identifying past or present medical issues and current medications. Any male over 40 years old or female over 50 years old was required to submit a signed medical clearance form from their primary physician.

The assessment results and client goals were reviewed by an exercise physiologist to develop the client's customized program and determine the appropriate protocols and targeted curriculum components.

### Program and Curriculum Development

The Lifegevity Program was developed to address the objectives and each area of intervention. The curriculum includes the step-by-step methodology based on each individual's personal prescription. Primary deliverables, which include self-study instruction guides, exercise protocols and work sheets and tests, address the fundamentals of the following areas:

- Change management
- Life direction and purpose
- Relaxation and mind/body integration
- Self-worth
- Assertiveness and effective communication
- Physical conditioning
- Mental conditioning
- Nutrition

The curriculum is structured into 12-week checkpoints with assessments and re-evaluation conducted at the end of the 12 weeks (some clients are re-assessed every 30 days based on improvement goals). Each client was provided with instructional materials and program guidelines (exercise routine, relaxation recommendations, nutritional consultation, etc.) defined by his or her personal prescription and top interventions.

Physical conditioning protocols were developed to address specific areas and included three levels of intensity. The protocols were developed and integrated into the Technogym program library for the following areas:

arthritis, lower back pain, osteoporosis, pregnancy, weight control, cardiovascular post-rehabilitation, hypertension and balance and motor control.

### **Program Implementation and Measurement**

The Lifegevity Program was implemented at Elan Vital's facility in Centerville, Ohio, which used an information technology infrastructure to track and monitor clients' progress. The exercise programs were implemented and tracked using the Technogym SmartKey system. This system provided for improved client compliance and tracking. For example, workloads were systematically adjusted according to the individual's level of fitness at any given time. Training intensity and duration were constantly updated to keep the user on target and within the training window that best accommodates pre-defined goals. The key components of the Lifegevity Program's closed-loop methodology are compliance monitoring, automatic workload adjustment and periodic reassessment.

All exercise data was stored and made available to the operator for a variety of administrative purposes. Validation of protocols, seamless collection of data for corporate, medical or research purposes and valuable feedback to the user are the deliverables of the Technogym System. A valid outcome requires an established baseline that is reproducible. The Technogym system is singularly unique in meeting this requirement.

Each program included specific conditioning and relaxation exercises to be completed at Vital's center and at the client's home. Instructional tools, such as posters, audiocassettes and videos, are available to assist in learning the skills and to provide assistance while at home. Completion logs were also provided to track progress made at home.

All workout data can be easily displayed at the Technogym Trainer Point for monitoring activity and compliance. Data is available by date or user-name, and can be examined as a single workout or as a summary. Data can be read by exercise or as averages and totals. Data made available per workout or per user include: calories burned (cardiovascular and strength), performance index (measure of cardiovascular improvement), volume, duration, heart rate, weight lifted, percentage of maximum work performed and percentage of work assigned by individual body part. This data was used to compare to re-assessment data to evaluate overall reliability of the data during re-assessments.

Fitness Publisher, a software application for tracking fitness performance testing data, was also used for reporting and averaging fitness test scores.

### **Follow-up Testing**

Each participant was reassessed throughout his or her program. Assessments were typically completed every 90 days. Some participants wanted assessments every 30 days to closely track performance-based results over and above what they received from the Technogym system reports. Each assessment included, at a minimum: body fat

analysis, VO<sub>2</sub>max and strength and flexibility testing. The body age and Lifegevity scores were only assessed every four to six months. Logs for recording exercise and relaxation time and nutritional information were reviewed to determine whether the client was following his or her program at home.

Assessment results were compared to actual performance results available from the Technogym system to ensure consistency and validity of the outcomes.

### **Program Results**

The results clearly identified the improvement individuals can have in their body age and stress level if they follow their prescribed program. The closer they stuck to their program, especially as it relates to performing interventions, such as relaxation or self-worth, the faster their health and vitality improved. Individual's "over-exercising" and dieting to lose weight had little or a negative effect on their body age and stress profile numbers.

The average participant has been in the program for over six months and has improved his or her overall health and fitness levels as follows:

- Average days in the program = 204
- Average systolic blood pressure at beginning of program = 131; at reassessment = 120
- Body age improvement of 8.1 years or 14 percent
- Lifegevity score improvement of 20.3 percent
- Weight reduction and body fat reduction decreased by 5 percent
- VO<sub>2</sub>max increased by 18.5 percent
- Upper body strength increased by 26.6 percent and lower body by 36.6 percent

The table on the following page shows examples of six subjects who currently participate in the Lifegevity Program.

Subject A has consistently followed his program and has had significant improvement in overall health based on his improved Lifegevity score (38 percent), reduced blood pressure (21 percent), reduced body fat and reduction in body age.

Subject B is probably one of the best followers of the Lifegevity Program. Through her on-going dedication to improving her health she has significantly reduced the chances of cancer and heart disease by improving her stress management skills and increased her Lifegevity score by 56 percent.

Subject C is a long-time marathon runner. You would assume based on her on-going exercise routine that her level of health is maximized for her age; however, she still has seen an improvement in her Lifegevity score and body age.

Subject D has seen significant improvements in body age and Lifegevity score. As one of the longest participants in the program, she has seen major health improvements, including reduced blood pressure and

Subject	Gender	Age	No. of Days	Stress Measures					Physical Improvements						
				Lifevity Score	Body Age	Initial Body Age	Retest Body Age	Body Age Change	Weight	SYS BP	Dia BP	Body Fat	VO2	Upper Strength	Lower Strength
A	Male	35+	145	32.8%	14.9%	-9.4	-2.4	7.0	13.2%	21.1%	21.5%	11.0%	44.9%	21.4%	68.8%
B	Female	45+	158	55.7%	9.8%	7.4	11.4	4.0	6.3%	6.7%	9.3%	4.4%	14.8%	71.4%	117.5%
C	Female	50+	150	12.7%	7.3%	13.2	16.1	2.9	-2.4%	3.1%	3.4%	0.0%	-7.4%	12.5%	33.3%
D	Female	55+	420	15.2%	42.0%	3.7	26.4	22.7	2.5%	14.8%	2.9%	2.3%	10.6%	28.6%	40.0%
E	Male	60+	582	6.2%	1.9%	7.7	8.7	1.0	13.0%	4.5%	13.5%	13.8%	10.3%	20.0%	21.7%
F	Female	70+	181	11.5%	17.2%	10.8	21.3	10.5	9.2%	6.2%	10.7%	7.7%	47.2%	12.5%	22.2%

elimination of lower back pain. After three months in the program, this participant’s back pain was reduced to the extent she discontinued use of any medications for pain relief. Subject D continues to practice her top three interventions and utilizes the relaxation room at Vitál’s facility on a regular basis.

Subject E is the prime example of someone who feels “more is better.” That is, thinking that continually doing more exercise, increasing heart rate and dieting are the measures of success; however, even with a significant improvement in body weight reduction there has been minimal improvement in VO2max, and most importantly, body age and Lifevity score.

Even senior adults can see improvements in their health and vitality. Subject F is 71 years old and has participated in the program for six months and has improved her Lifevity score by 15.2 percent and body age by over 10 years. Continued improvement in body fat

reduction, VO2max and strength provides the senior with the vitality to continue enjoying life.

**Conclusion**

The Lifevity Program is focused on helping individuals achieve maximum health and vitality at every stage of their life. Through understanding the right starting point and following a personal prescription, overall health can be improved with the ability to significantly reduce the chances of heart disease and cancer. This statement is substantiated by the latest studies that pinpoint some of the primary causes of cancer and heart disease. By reducing and/or eliminating these root causes, cancer and heart disease can be reduced while overall health can improve through feeling better both physically and mentally. The Lifevity Program is the silver bullet for reducing the effects of aging and maintaining a healthy and happy life.

**End Notes:**

<sup>1</sup> The Lifevity® Program is a registered trademark of The Lifevity Institute. and is based on clinical research defined in this document and on research conducted at the Lifevity Institute in Centerville, Ohio over the last 18 months.  
<sup>2</sup> The Lifevity Institute. owns the U.S. rights to use the Canadian Institute of Stress (CIS) assessment tool within its facilities throughout the U.S. CIS found an 11.4-year improvement in body age and significant improvements in cholesterol, blood pressure, stress level and fitness level in as few as eight months. Over 8,500 subjects were studied over a 10-year period. Further information can be found in “Reduce Your Body Age,” by Richard Earle, Ph.D., 1998.  
<sup>3</sup> “Recommendations for Cardiovascular Screening, Staffing, and Emergency Policies at Health/Fitness Facilities,” American Heart Association Science Advisory and Coordinating Committee, March 1998.  
<sup>4</sup> Initial research was based on interviews of older adults looking for improvements in health, research released by the American Institute on Aging, Surgeon General’s Report of physical fitness and program validation by experts in the senior wellness field, including **Dr. Richard Earle**, president and co-founder, Canadian Institute of Stress, and co-author of the book “Your Vitality Quotient;” **John Rude**, president, John Rude and Associates – a consulting company targeting senior fitness; **Donald DeMar**, president and CEO, Donald DeMar International, fitness industry-leading architect – provided consulting and guidance on Wellbridge (Boston-based senior fitness company) business plan and implementation; **Kristen Moore**, wellness director, manages programs and staff of three Durham, N.C. YMCA’s – M.A., exercise physiology and vast experience working with seniors; **Aaron Binders**, senior fitness advocate and entrepreneur – currently developing a senior fitness video, book and exercise products focused on the senior market; **Laurie O’Brian**, ACE-certified personal trainer exercise physiologist for Johnson & Johnson corporate fitness programs – manages NCR’s corporate fitness center; **Gregg Phillips**, president, SOA Publishing, developed successful nutrition program “Think Light” that is sold in health clubs and fitness centers throughout the U.S., **Anna Marie Short**, retired marketing vice-president, Senior Care Facility, extensive experience in senior care facilities and

working within the medical industry; **Dr. Catherine Zofkie**, geriatric medicine, Kettering Memorial Hospital, practicing in managed care and nursing home facilities serving the senior citizen market.  
<sup>5</sup> “Recommendations for Cardiovascular Screening, Staffing and Emergency Policies at Health/Fitness Facilities,” American Heart Association Science Advisory and Coordinating Committee, March 1998.  
<sup>6</sup> “Harvard Report on Cancer Prevention: Volume 4: Harvard Cancer Risk Index,” G.A. Colditz, et al., Channing Laboratory, Department of Medicine, Brigham and Women’s Hospital and Harvard Medical School and the Harvard Center for Cancer Prevention, 677 Huntington Ave., Boston, MA 02115, published in 2000.  
<sup>7</sup> “Aging, Physical Activity, and Health,” Roy Shephard, University of Toronto, Human Kinetics, 1997, and various articles published in “Journal of Aging and Physical Activity”  
<sup>8</sup> “Precision Heart Rate Training,” Edmund Burke, Human Kinetics, 1998, and “The Heart Rate Monitor Book,” Sally Edwards, Polar Electro, Oy, 1998.  
<sup>9</sup> “Return to Life Through Contrology, The Philosophy of the Pilates Form of Conditioning,” Joseph Pilates and William Miller, 1945.  
<sup>10</sup> “The Alexander Technique Manual,” Richard Brennan, Journey Editions, Boston, 1996.  
<sup>11</sup> “Total Relaxation”, John Harvey, 1996.  
<sup>12</sup> “ACSM’s Guidelines for Exercise Testing and Prescription,” Sixth Edition, American College of Sports Medicine, Lippincott, Williams & Wilkins, 2000.  
<sup>13</sup> “Senior Fitness Personal Training Manual,” second edition, American Senior Fitness Association, 1996.  
<sup>14</sup> “Advanced Fitness Assessment Exercise Prescription,” Vivian Heyward, University of New Mexico, Human Kinetics, 1998.