

Comprehensive Lifestyle Intervention Improves Hair and Skin Status and Mental and Physical Functioning

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ABSTRACT

OBJECTIVE: To study the effects of nutrition and other lifestyle factors on hair and skin, which reflect the body's aging process, and on numerous aspects of mental, physical, and energy functioning. **METHODS:**

The six-month program included protocols for nutrition, physical activity, supplementation, stress management, behavior modification, and personal environment factors.

MEASURES: The study obtained ratings on the degree of change in 20 measures of hair, skin, and nail conditions and in 22 measures of mental, physical, and energy functioning. **RESULTS:** The percentage of participants who saw improvements in each of the 20 measures of hair or skin status ranged from 37.4% to 86.7%.

Incidentally, we found that anywhere from 36.3% to 91.5% saw positive change in each measure of mental, physical, or energy functioning.

CONCLUSION: The findings suggest that a comprehensive lifestyle intervention is an effective way to improve the condition of hair and skin and achieve changes in day-to-day functioning that can improve one's quality of life. The study also demonstrates the value of a "wellness model" in the medical paradigm, one that uses natural, nontoxic interventions to enhance the functioning of patients.

Introduction

The six-month "Hair and Skin Study" was a part of a larger, ongoing intervention study that evaluated the effect of multiple lifestyle factors – nutrition, supplementataion, exercise, stress management, behavior modification, and personal environment – on objective measures of bodily functioning and overall wellness. The biological health measures of the prior study have included body weight, blood pressure, and cholesterol and triglyceride lipid levels. In this phase of the intervention, we focused on the effect of lifestyle changes on the condition of hair and skin, which are observable indicators of the aging process, and on various aspects of physical, mental, and energy functioning. Participants who entered the study had problems with hair, skin, or both.

The goal of the study was to improve the condition of participants' hair and skin. For hair, specific goals were to induce new hair growth in bald areas, slow thinning of hair, and reverse graying. These problems are caused by the aging process and/or genetic predispositions. The attempt to overcome genetic limitations was a new challenge for the intervention program. For skin, the goal was to reverse or improve the effects of sun damage and premature aging of the skin.

We designed the nutritional portion of the intervention to combat

processes that cause aging and to help build the body's capacity to repair damage. The causes of aging, among others, include damage to DNA from oxidative stress, whereby free radicals attack cells and compromise their ability to function, and glycation, which creates a cross-linking of proteins and sugars that has a negative effect on cells and damages skin over time. We also had to address the process of inflammation in the body, which leads to deterioration and aging.

Therefore, we emphasized a high intake of phytonutrients in the program's largely vegetarian diet.¹⁻⁶ We hypothesized that the body must be saturated with phytonutrients to have the capacity to exceed basic functions – such as repairing damage to cells, detoxifying, and preventing illness – and begin to prevent damage to DNA and actually repair it, leading to improvements in hair and skin. The question was whether people could reach the level the input needed to compensate for negative factors and allow the body to repair itself. This level of compensation, if achieved, would help to reduce system damage, reverse DNA damage, and exceed genetic limitations that had caused loss of hair or graying. We also could observe the effects of this approach on various aspects of skin health.

In addition to the focus on phytonutrients, we included all of the same protocols that were used

in our prior lifestyle intervention studies. Participants had to eat the healthy foods included in our diet, exercise regularly, take recommended supplements, avoid harmful foods and environmental chemicals and toxins, manage stress, and work toward self-empowerment through behavior modification. (See discussion of the specific protocols below.)

Applying these interventions, our prior lifestyle studies have documented positive changes in a number of biological measures, including weight, impedance for body fat, blood pressure, and lipids status (total cholesterol, LDL cholesterol, and the ratio of total cholesterol to HDL cholesterol). Incidentally, prior participants also saw improvements in seven subjective measures of physical and mental functioning, including energy, immune function, mental function, sugar and carbohydrate problems, skin health, joint function, and digestion. The results suggested that people can improve their quality of life and overall wellness by optimizing such aspects of day-to-day functioning.

Methods

The "Hair and Skin Study" included 368 people at the outset; 140 of those participants completed all aspects of the study. The participation criterion for age and hair loss was as follows: people 22 to 80 years of age had to have experienced balding, thinning, or graying of hair for at least seven years. The purpose of this parameter was to exclude people who had experienced singular life events, such as chemotherapy, infection, or stress, that may have precipitated a temporary hair loss. Many participants also entered the study with significant skin problems, such as poor skin texture and skin tone, wrinkles, acne, and blemishes.

As part of the intervention, we held a group meeting for participants every other week that included a lecture and information about diet, exercise, stress management, meditation, and supplementation.

Individual questions and concerns were addressed. Participants also were required to maintain a weekly journal in which they wrote about life issues and challenges. The journal writing helped them to identify their life goals, methods of achieving those goals, and any obstacles they might encounter along the way.

To measure the results of the six-month study, we created a comprehensive, preformatted questionnaire that asked participants to rate the level of change (or lack thereof) in 20 specific measures of hair, skin, and nail condition and in 22 aspects of mental, physical, and energy functioning. The rating scale provided for five outcomes in each measure listed: worse, unchanged, improved, slightly improved, or much improved. At the end of the six-month program, we also filmed participants as they discussed any changes that had occurred with their hair, skin, and day-to-day functioning.

The Value of Lifestyle Interventions

The medical literature contains a growing body of information about the importance of the lifestyle choices we make. For those people who would argue there is no scientific support for the elements of this protocol, the literature offers more than abundant evidence to the contrary. Indeed, it is the volume of studies published in scientific journals on the individual components of the intervention that proves the value of each component.

We have conducted an extensive review of the literature to identify articles on the lifestyle components included in the "Hair and Skin Study." (A listing of "Literature Citations" is provided with the unabridged version of this article, posted on www.townsendletter.com.) These citations provide background information on the many benefits of each lifestyle change and thereby can support health care professionals in implementing such interventions with patients. One useful approach is to share some of the reference materials with patients so that they can learn about the benefits involved in each of

the lifestyle changes. The references cover the following topics:

1. Nutrition

- Vegetarian diet (42 references)
- Fruits, vegetables, antioxidants, and phytochemicals (27 references)
- Meat consumption (9 references)
- Nutrition and DNA damage and repair (8 references)

2. Supplementation (14 references)

3. Exercise (46 references)

4. Stress management and relaxation

- Tai chi (9 references)
- Qi gong (14 references)
- Meditation (18 references)
- Stress management (3 references)
- Prayer (11 references)
- Yoga (7 references)
- Journal writing (6 references)

5. Self-actualization (14 references)

6. Environmental hygiene (2 references)

Among studies of lifestyle interventions, many have evaluated the effect of one lifestyle factor alone, such as diet or exercise, on participants' health.⁷⁻⁹ Others are multifactorial interventions that have studied the effects of two or more lifestyle factors combined, such as nutrition, physical activity, stress management, smoking cessation, and group or social support.¹⁰⁻¹³ For example, Ornish et al. studied the effect of diet, smoking cessation, stress management, and moderate exercise on patients with atherosclerosis.¹⁴ Esposito et al. investigated the effect of weight loss, diet, and physical activity on premenopausal obese women without diabetes, hypertension, or hyperlipidemia.¹⁵ Toobert et al. studied the effect of diet, stress management, exercise, group support, and smoking cessation on postmenopausal women with type 2 diabetes.¹⁶

Our study is the first we are aware of that combined the six lifestyle factors noted – nutrition, exercise,



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supplementation, stress management, behavioral change, and personal environmental hygiene – into one comprehensive program. We asked participants to make the changes concurrently, as do people in everyday life. This approach allowed us to study the combined effects on hair and skin and on numerous aspects of daily functioning that help determine one's well-being.

The Program Protocols

Participants integrated the following six components of the intervention into their lifestyle:

Nutrition

The diet required by the program was largely vegetarian.¹⁷⁻¹⁹ (See the unabridged version of this article on www.townsendletter.com for nearly 40 more references on vegetarian eating.) The nutritional protocols focused on a high intake of complex carbohydrates and allowed healthy fats as well. Participants could elect to eat fish if they wished, because the omega-3 fatty acids found in various types of fish protect against heart disease and stroke and provide other health benefits.²⁰⁻²² However, types of fish containing high levels of mercury or polychlorinated biphenyls were to be avoided.²³

One important aspect of the diet was to supply with body with antioxidants. These compounds neutralize free radicals, which can damage cells and DNA, and counter the process of oxidation in the body. Free radicals and oxidative stress may contribute to degenerative diseases and the aging process.²⁴ An antioxidant defense is important at all times, but it takes on added significance when people are exercising regularly and/or losing weight, as was the case with our participants. Exercise and weight loss offer significant benefits, but they also produce more free radicals that must be stabilized. In the case of weight loss, free radicals are produced

as the fat mass decreases, and fat cells release toxins in the body.

Research shows that the types of foods emphasized in our dietary protocols are good sources of antioxidants. A 2004 study used the oxygen radical absorbance capacity (ORAC) assay to analyze the antioxidant capacities of more than 100 foods. The top ten foods in total antioxidant capacity per serving were small red bean (dried), wild blueberry, red kidney bean (dried), pinto bean, blueberry (cultivated), cranberry, artichoke (cooked), blackberry, dried prune, and raspberry. Among all of the foods and spices studied, the top fruits were blueberries, cranberries, and blackberries; the top vegetables were beans, artichokes, and Russet potatoes; the top nuts were pecans, walnuts, and hazelnuts; and the top spices were ground cloves, cinnamon, and oregano.^{25,26} Other studies confirm the antioxidant activity of commonly eaten fruits and vegetables.^{27,28}

Specifically, the program's diet featured the following three-pronged approach:

Elimination of Unhealthy Foods

The diet excluded foods and beverages that contribute to glycation and inflammation and have documented negative health effects. The banned foods included all animal protein (beef and poultry) and shellfish; dairy products; wheat; alcohol and caffeine; simple sugars and artificial sweeteners; soft drinks and carbonated beverages; fried, barbecued, and processed foods; food additives; canned and salted foods; dried fruits; preservatives; coloring agents, flavorings, MSG, and yeast.

Inclusion of Healthy Foods

Participants were asked to eat organic foods as much as possible. We suggested that they eat a light breakfast (such as a protein smoothie containing berries, protein powder, vitamin C, flaxseed oil, walnuts, and

rice or soy milk), a main meal between 1 PM and 3 PM, and a light dinner (such as grains, a salad, sea vegetable, and/or soup).

In particular, the diet included the following foods and beverages:

- Good-quality protein from vegetarian sources (such as beans, legumes, nuts, and seeds) and from fish (optional)

Protein intake was approximately 0.9 g/kg of body weight (40 to 60 g of high-quality protein for women and 60 to 80 g for men).

- Nine servings of nutrient-dense fruits and vegetables per day

Fiber intake was at least 35 to 50 grams. Recommended vegetables included salad and green leafy vegetables, cabbage, broccoli, cauliflower, radishes, turnips, Brussels sprouts, yellow gold or Russet potatoes, sweet potatoes, parsnips, kohlrabi, and squash. Recommended fruits included berries (all kinds, fresh or frozen), purple and red grapes, kiwis, apples, melons, citrus, and star fruit.

- Four servings of beans/legumes and grains (such as brown rice, buckwheat, amaranth, spelt, quinoa, and millet)
- Other foods and beverages included in the diet were sprouts, sea vegetables, nuts (such as walnuts, almonds, pine nuts, pistachios, pecans) and nut butters, seeds (such as sesame and pumpkin), soy products (tofu, tempeh, miso), onions and garlic, olive oil (extra virgin cold-pressed), coconut oil, flaxseed oil, walnut oil, avocado oil, spring or filtered water, herbal green teas, and grain beverages.
- Juices: participants consumed green and fruit juices at a ratio of five vegetable juices to one fruit juice. They started with one 10- to 16-ounce glass of juice per day in week 1 and built up to eight glasses per day in week 8. The green juice could be made with four ounces of dark and light green vegetables and six ounces of water, or one tablespoon of chlorophyll-rich green powder and ten ounces of water. To this, one ounce of aloe concentrate and one teaspoon of red fruit powder was added. Another option was to combine the green juice with six ounces of aloe vera, soy or rice protein, coconut oil, and flaxseed oil.

Emphasis on Phytonutrients

The "repair" portion of the program involves the hypothesis of the study: that the consumption of

the high quantities of phytochemicals found in juices, vegetables, and fruits will support hair and skin health and optimize other aspects of bodily functioning, including the immune system. Phytonutrients are among the principal agents of DNA damage repair.²⁹⁻³⁶

Participants were encouraged to consume antioxidant-rich foods and juices that help the body to stop inflammation, neutralize free-radical damage to DNA, and exceed genetic limitations causing hair and skin problems. Fruits containing a high level of antioxidants include blueberry, wild blueberry concentrate, tart cherry, black cherry, cranberry, boysenberry, mango, papaya, grape concentrate, and coffeeberry.

Another source of phytonutrients was the daily intake of juices required by the program, as described above. Juicing was a critical part of the nutritional protocols because of the health benefits it provides. Juices flood the body with restorative enzymes, help turn off inflammation, and detoxify the system. In addition to juices, participants also could obtain phytonutrients from powdered concentrates of juices, fruits, and vegetables. These concentrates are available in health food stores.

Supplementation

In addition to the dietary protocols, the lifestyle program recommended a broad-based intake of nutritional supplements. (See the unabridged version of this article on www.townsendletter.com for 14 references on supplementation.)

We recommended supplementation in a general fashion, because it would be difficult to monitor the exact dosages taken by participants. In addition, we did not specify a particular brand of supplements for use in the program, allowing people the freedom to determine which brands they liked and to comparison shop for better prices that would reduce the total cost of supplementation. We also advised participants to use supplements that did not contain ingredients that might produce an

allergic or other reaction. These include sugar, starch, lactose, eggs, corn, yeast, wheat, and preservatives.

Our supplementation protocol included a variety of vitamins, minerals, and other nutrients. Some of the recommended nutrients were antioxidants that worked with the program's diet to supply the body with free radical scavengers.³⁷⁻³⁸ Specific nutrients may have their own antioxidant properties or may contribute to the body's production of antioxidant enzymes such as superoxide dismutase (which requires copper, zinc, and manganese) and glutathione peroxidase (which requires selenium).³⁹⁻⁴¹ Table 1 provides an overview of the antioxidant nutrients recommended by our program.

Beyond the antioxidant nutrients, the program recommended a number of other supplements. These included comprehensive B complex, which was taken orally in divided doses throughout the day because it is

water-soluble. This complex includes vitamin B1 (thiamin), vitamin B2 (riboflavin), vitamin B3 (niacinamide), vitamin B5 (pantothenic acid), vitamin B6 (pyridoxine), folic acid, biotin, choline, and para amino benzoic acid. Unlike the other B vitamins, vitamin B12 (cyanocobalamin) was to be taken sublingually because this method of absorption is more effective than the oral route.

A bioflavonoid complex, including quercetin, hesperidin, and rutin, was to be taken separately or in combination with vitamin C. Similarly, vitamin D3 (cholecalciferol) was to be taken separately or as part of a combined formula.

Healthy fats and oils recommended by the program included a fish oil-based supplement with eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). An alternative for participants who elected not to eat fish, which was optional in the diet, was a flaxseed

Table 1. Recommended Antioxidant Supplements

Vitamin C (ascorbic acid)	Taken in divided doses to bowel tolerance level To determine this level, an individual gradually increases the total daily dosage until loose bowel movements or diarrhea occurs, then cuts back to the dosage that prevents diarrhea. We recommended a supplement that was <i>not</i> corn-based due to the potential for allergic reactions. In addition to water-soluble ascorbic acid, we recommended fat-soluble vitamin C (ascorbyl palmitate).
Vitamin A	Taken primarily as beta carotene and also as palmitate, with or without mixed carotenoids
Vitamin E	Taken separately or as part of a multiple supplement
Comprehensive mineral complex	Taken as a part of a combined formula or as individual supplements; complex to include selenium, zinc, manganese, magnesium, calcium, chromium, boron, and molybdenum
Coenzyme Q10	An antioxidant that facilitates energy production and benefits the heart, gums, nerves, and muscles
Alpha lipoic acid	A water- and fat-soluble antioxidant that assists in energy production, protects cells, and aids the skin
Grapeseed extract	A water- and fat-soluble antioxidant that benefits blood vessels, vision, and skin
N-acetylcysteine	A precursor to glutathione, a major antioxidant and detoxifier
Acetyl L-carnitine	An antioxidant that aids the functioning of the mitochondria of cells and benefits brain function

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oil supplement. Also recommended was gamma linolenic acid, found in borage oil, evening primrose oil, and black currant seed oil.

Three other recommended supplements were L-carnosine to promote the longevity of cells; *L. acidophilus* and *B. bifidum* to optimize the balance of the small and large intestines; and phosphatidylcholine to support brain and liver function.

Exercise

The exercise component of the intervention included both aerobic and resistance training. For the aerobic portion, the program recommended at least 45 minutes of cardiac conditioning a day in which participants sustained 70% of their optimal heart rate. We suggested power walking as one effective form of aerobic exercise.⁴²⁻⁴³ (See www.townsendletter.com for 44 more references on exercise.) Although

exercise produces harmful free radicals, we corrected for that factor in the lifestyle program by emphasizing the consumption of antioxidants. Resistance training was to be done for a half-hour a day, working on every muscle group in the body.

Stress Management

The relaxation/meditation component recommended a minimum of two half-hour sessions per day of techniques such as Tai Chi,⁴⁴ qi gong,⁴⁵ meditation,⁴⁶ prayer,⁴⁷ yoga,⁴⁸ journal writing,⁴⁹ listening to calming music,⁵⁰ or walking. (See www.townsendletter.com for more than 65 references on stress management/relaxation techniques.)

Self-Actualization Leading to Self-Empowerment

Participants required emotional and physical support to adopt lifestyle behaviors that often differed from the

habits that had negatively affected their health and contributed to hair and skin problems. We provided the necessary support through group counseling sessions, hands-on exercise demonstration, and a "buddy system" that allowed small groups of participants to talk and support each other throughout the study period. Coaching included education on the benefits of a vegetarian diet for greater health.

It also was important for participants to change their attitude toward the specific components of the program, such as vegetarian eating and daily exercise, and toward any toxic relationships they had in their lives. Those who developed a good attitude were better able to make the necessary changes and achieve positive results. In some cases, participants had to develop new social networks to comply with the nutritional requirements of the program because they differed so much from the standard American diet. They formed new relationships with people who would support their dietary and attitudinal changes.

Figure 1. Breakdown of Degree of Change Assessed in Eight Sample Hair and Skin Measures

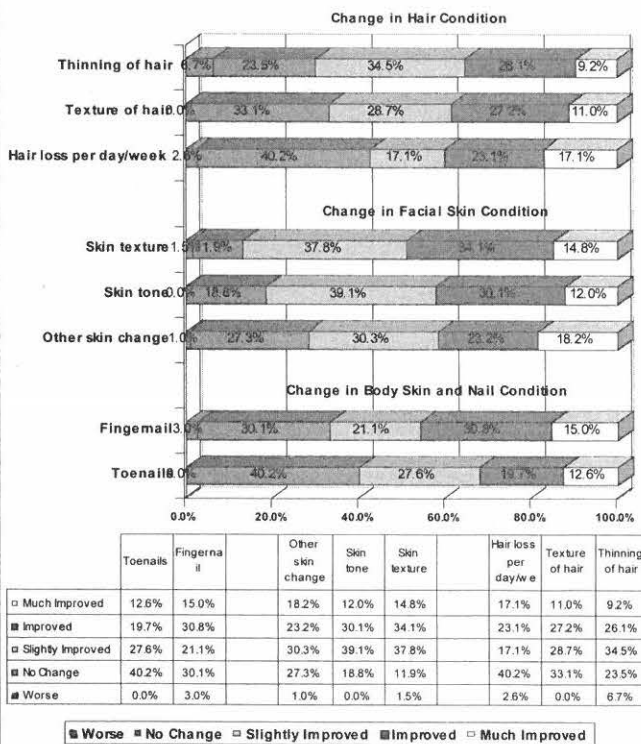
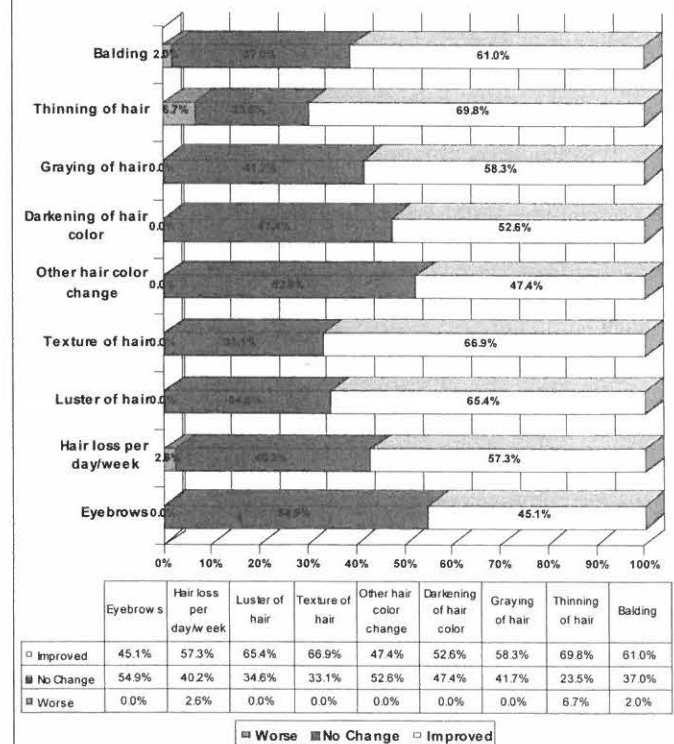


Figure 2. Participants' Assessment of Change in Hair Condition



Environmental Hygiene

For the personal environment component of the study, participants were asked to reduce their exposure to air pollutants, allergens, toxins, and electromagnetic fields in their living and work environments.⁵¹⁻⁵² Some participants had to do a complete overhaul of their living and work spaces to eliminate clutter, find nontoxic cleaning products, reduce dry cleaning, etc. Others had to evaluate their homes, workplaces, and neighborhoods and make major changes to lessen their environmental exposure to toxins.

Results

The study found varying levels of improvement in the 20 measures of hair and skin condition that were rated. We also found improvements in the 22 aspects of mental, physical, and energy functioning rated by participants.

At the end of the six-month program, participants scored each outcome measure listed on our

questionnaire as worse, unchanged, slightly improved, improved, or much improved. To simplify the presentation of data in this article, we have combined the three levels of improved condition – slightly improved, improved, and much improved – into one category in most of the charts included here (except Figure 1). What follows is a detailed look at the study results.

Hair and Skin Results

In Figure 1, we break down participants' ratings in eight of the 20 measures of hair, skin, and nail status into the five levels presented in our rating scale: worse, unchanged, slightly improved, improved, and much improved. As shown in the chart, participants' ratings tended to cluster in the "slightly improved" and "improved" categories.

Figure 2 shows the percentages of participants who experienced

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change in the nine measures of hair status we listed. (As noted, the three levels of improvement listed in our questionnaire have been combined into one "improved" category in Figure 2 and all those that follow.) The two most frequently improved hair measures were thinning of hair (69.8% of participants) and hair texture (66.9%). More than half of participants also scored improvements in luster of hair (65.4%), balding (61.0%), graying of hair (58.3%), hair loss per day/week (57.3%), and darkening of hair color (52.6%).

Participants who scored "no change" in the nine hair measures ranged from 23.5% (thinning of hair) to 54.9% (eyebrows). Some participants rated three of the hair-status measures as "worse": thinning of hair (6.7%), hair loss per day/week (2.6%), and balding (2.0%).

Figure 3 shows the level of improvement in the seven measures of facial skin that we asked participants to rate. The two measures improved most often were skin texture (86.7%)

Figure 3. Participants' Assessment of Change in Facial Skin Condition

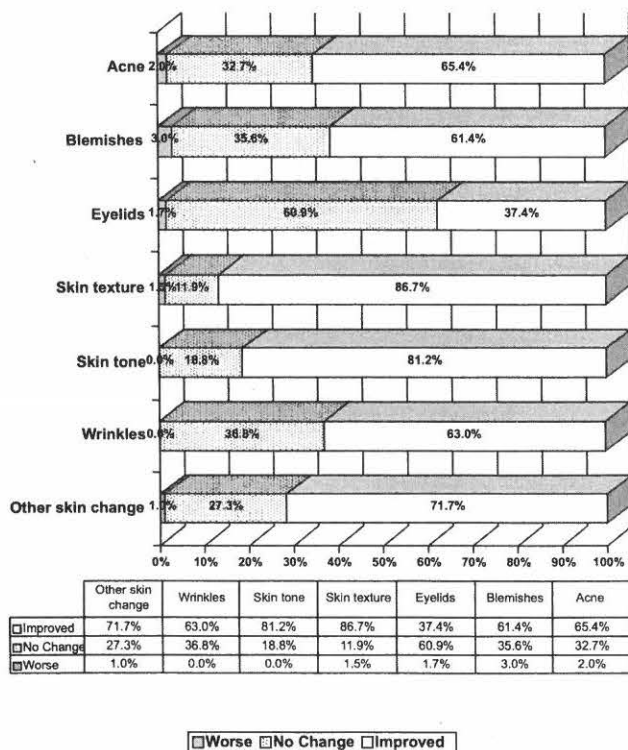
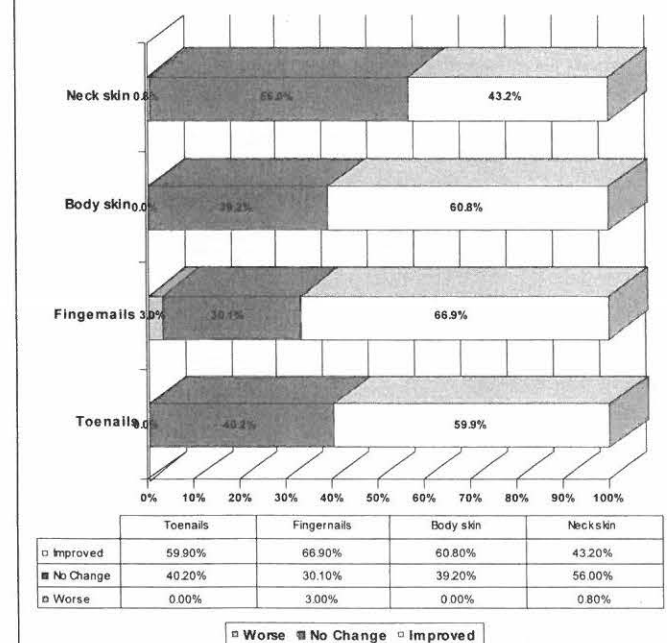


Figure 4. Participants' Assessment of Change in Body Skin and Nails



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and skin tone (81.2%). Also improved were acne when present upon entry (65.4%), wrinkles (63.0%), blemishes (61.4%), and eyelids (37.4%).

Figure 4 shows the improvements found in four measures of body skin and nail condition: fingernails (66.9%), body skin (60.8%), toenails (59.9%), and neck skin (43.2%).

Mental, Physical, and Energy Functioning Results

Participants' ratings documented a high frequency of improvement in mental capabilities and energy status, along with positive changes in many aspects of physical functioning. Figure 5 shows that 91.5% of participants rated their overall energy status as improved. There were improvements across the board in eight specific measures of energy functioning, including consistency of energy

(90.8%), exercise endurance (88.6%), mood (86.2%), afternoon energy (83.3%), evening energy (81.9%), morning energy (81.8%), episodic changes (75.6%), and rest periods needed (67.7%).

Figure 6 displays results in the physical functioning category. Of the eight outcome measures we specified in this area, the three that were improved most frequently were overall immune resistance (86.5%), a variety of other physical functions (78.1%), and sleep (67.0%). Also improved were overall joint function (66.7%), sugar reactions (65.2%), overall allergy condition (58.1%), pain (51.4%), and headaches (36.3%).

Overall mental function was improved in 82.9% of participants (see chart in the unabridged version of this article on www.townsendletter.com).

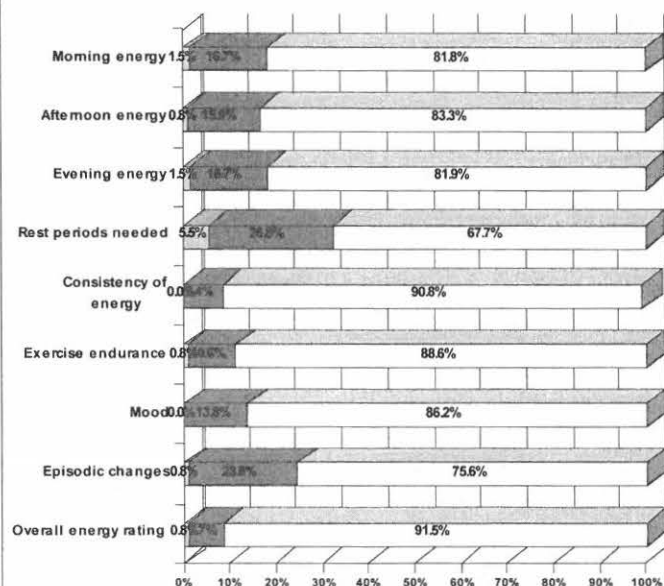
In the four specific measures of mental functioning that we listed, more than three-fourths said their memory (78.9%), attention span (76.5%), and clarity of thought (76.3%) had improved. Frequency of brain fog was improved in 64.2% of participants who were experiencing this problem upon entry to the program.

Results by Gender and Age

Men and women had similar positive outcomes in our measures of hair, skin, and bodily functioning, as did participants in two age subsets: below age 55, and age 55 and older.

We compared mean scores for the two age subsets in our 20 measures of hair and skin condition (see chart in the unabridged version of this article on www.townsendletter.com). We found that participants under age 55 did significantly better (p value of .05 or less) than older participants in six of the 20 measures (acne, blemishes, skin tone, other skin change, body skin,

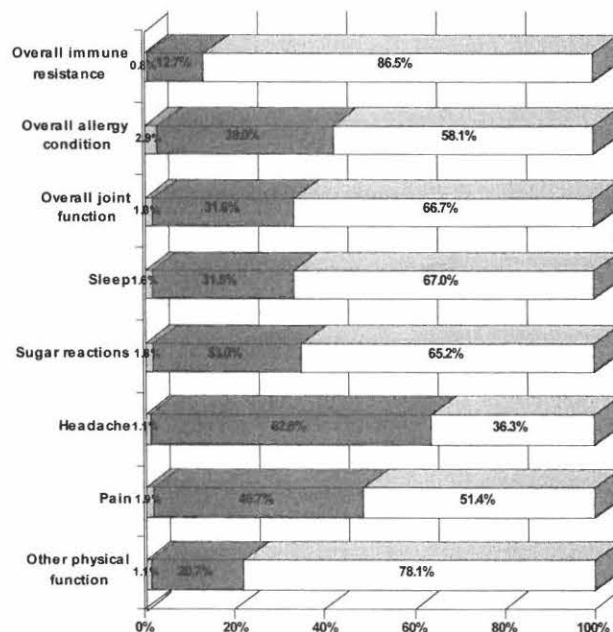
Figure 5. Participants' Assessment of Change in Energy Function



	Overall energy rating	Episodic changes	Mood	Exercise endurance	Consistency of energy	Rest periods needed	Evening energy	Afternoon energy	Morning energy
Improved	91.50%	75.60%	86.20%	88.60%	90.80%	67.70%	81.90%	83.30%	81.80%
No Change	7.70%	23.80%	13.80%	10.60%	8.40%	26.80%	16.70%	15.90%	16.70%
Worse	0.80%	0.80%	0.00%	0.80%	0.00%	5.50%	1.50%	0.80%	1.50%

Worse No Change Improved

Figure 6. Participants' Assessment of Change in Physical Function



	Other physical function	Pain	Headache	Sugar reactions	Sleep	Overall joint function	Overall allergy condition	Overall immune resistance
Improved	78.10%	51.40%	36.30%	65.20%	67.00%	66.70%	58.10%	86.50%
No Change	20.70%	48.70%	62.60%	33.00%	31.50%	31.60%	39.00%	12.70%
Worse	1.10%	1.90%	1.10%	1.80%	1.80%	1.80%	2.90%	0.80%

Worse No Change Improved

and toenails). However, there was no significant difference in the age-related mean scores for the other 14 hair and skin measures. The younger participants also did significantly better in five of 22 measures of mental, physical, and energy functioning.

Similarly, we compared results for male and female participants (see chart in the unabridged version of this article on www.townsendletter.com). The mean scores of women were significantly better than men's in six of 20 hair and skin measures (balding, thinning of hair, other hair color change, texture of hair, hair loss per day/week, and neck skin). But there were no significant differences between women and men in the other 16 measures of hair and skin. Women also did better than men in six of 22 measures of mental, physical, and energy functioning.

Discussion

We believe that a multifactorial approach to lifestyle change is crucial to ameliorating damage to hair and skin. We also realize that a comprehensive approach requires substantial discipline and a willingness to surrender some unhealthy comforts. Hence, the need for more time and input in the self-empowerment component of the protocol.

The feedback we received is that the better people felt about themselves, the easier it was to sustain these rather severe lifestyle and behavioral changes. We also questioned more than 100 people who left the study early on, and they overwhelmingly complained that they did not have the discipline, self-confidence, or personal support system to see this program through. Therefore, our recommendation would be to work intensively for the first three months on improving self-esteem, gaining confidence, overcoming fear, and developing strength of character while educating people on the kind of lifestyle changes required by this intervention.

The final point to be made is that we have kept in contact with most of the people who completed the study.

We have been encouraged to find that most are continuing with the protocols and seeing more improvements in all areas, although we have not measured those additional results. Despite the psychological hurdles to significant lifestyle changes, our findings suggest that the program's protocols are safe, nontoxic interventions that improve

On an individual level, the study has enormous implications for people who are not afraid to choose a more vigorous change in lifestyle and enjoy a healthy, happy, and fulfilled life. Extrapolating from this data would suggest that a wellness protocol could improve one's health or prevent diseases that we as a nation are ill-

Patients who are self-empowered, as were the participants in this study, do not have to wait until there is a breakdown in bodily functioning to finally address their health. They can take greater responsibility for their well-being and help prevent such breakdowns from occurring.

hair and skin status and overall wellness at far less cost than the treatments preferred by conventional medicine, including pharmaceuticals, plastic surgery, and other types of surgery.

Indeed, the greatest expense associated with this program was the cost of organic vegetarian foods for those who were able to obtain organic items. Generally, organic produce may cost 25% to 150% more than the same conventional items, depending on factors such as the specific food, the season, and the geographical area.⁵³ (On the other hand, participants could save money by eliminating meat and junk food from the diet.) Participants also purchased certain appliances and environmental filters. Sample costs include: juicing machine (\$180 to \$360), water filter (\$130 to \$500), fluoride filter where needed (\$70 to \$100), chlorine shower filter (\$40 to \$65), and HEPA-grade air purifier (\$180 to \$500). Finally, some participants joined health clubs as well (national median monthly cost of membership for 2004: \$55⁵⁴; \$60 to \$100 per month in New York City). However, these expenses are minor compared with the cost of medications and health care treatments that may be needed by people who make unhealthy lifestyle choices.

prepared to deal with constructively.

On a broader level, the findings suggest that a wellness model would be an invaluable addition to the preventive health care system in America. We are currently spending \$2.2 trillion on disease but little to nothing on authentic prevention. We have a health care crisis in America. Health benefits for sick workers are a major cost to US corporations, and more than 47 million Americans have no or little health insurance. Patients who are self-empowered, as were the participants in this study, do not have to wait until there is a breakdown in bodily functioning to finally address their health. They can take greater responsibility for their well-being and help prevent such breakdowns from occurring.

Clearly we need a shift in perspective, and this study helps provide that. It is the first lifestyle intervention we know of that has studied the combined effects of the six lifestyle factors included in our program: nutrition, exercise, supplementation, stress management, behavioral change, and personal environment. We hope it will be used as the new standard for a comprehensive, high-quality health care intervention.

Hair and Skin Study

There were no financial sponsors of the "Hair and Skin Study." All of the lecturers, instructors, and medical supervisors donated their expertise at no cost.

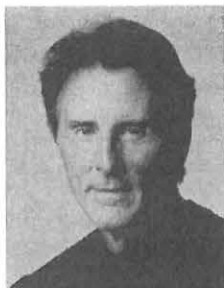
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Note: A longer version of this article, which includes more references and additional figures/charts is available at www.townsendletter.com.

Notes

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