weights, but instead to survive and thrive in the wild as generalists.[4] Not coincidentally, the exercise patterns that appear to be ideal for promoting fitness and general health, while minimizing injury risks, are similar to the requisite hunter-gatherer activity pattern. The following list outlines fundamental elements of "organic exercise," which may serve as a template from which to design a fitness strategy for adults living in today's modern industrialized culture.

1. A large amount background daily, light-to-moderate activity such as walking was required. Although the distances covered would have varied widely according to hunting and foraging routines, cultures, weather, seasons, ages, etc., most estimates indicate that the average daily distances covered were in the range of 6 to 16 km.
2. Hard days were typically followed by an easier day, but every day a variety of physical activities had to be accomplished just to provide for the basic human needs. The hunter-gatherers' daily energy expenditures for physical activity typically were at least 800 to 1200 kcal or about 3 to 5 times that of modern sedentary individuals.[33]
3. Individuals walked or ran on natural surfaces, such as grass and dirt, and often on uneven ground; our ancient ancestors almost never walked or ran on solid flat rock. The combination of softer natural walking/running surfaces and less biomechanically restrictive shoes is a more evolutionarily congruent strategy to reduce impact loading of the joints.
4. Life in the wild often called for intermittent bursts of moderate-to-high level intensity exercise with intervening periods of rest and recovery. High-intensity interval training sessions should be performed once or twice per week.
5. Cross-training is important and should include exercises focusing on strength (resistive), endurance (aerobic), and flexibility (stretching). Rotation among multiple different forms of exercise develops resilience and multifaceted fitness and reduces the likelihood of overuse injury, boredom, and emotional burnout.
6. Regular sessions of weight training and other strength-building exercises are essential for optimizing health and fitness. These need to be performed at least 2 or 3 times per week, for at least 20 to 30 minutes per session.
7. In general, hunter-gatherers were lean, and probably almost never obese, which reduced trauma to their joints.[16]
8. Virtually all of the exercise was done outdoors in the natural world. Outdoor activities help maintain ultraviolet-stimulated vitamin D synthesis, improve mood, and facilitate adherence to a regular exercise program.
9. Much of the physical activity was done in context of a social setting (small bands of individuals who were hunting or foraging were working together on various chores). There is substantial evidence that some of the psychological benefits of formal exercise training programs are derived from the social bonding and other unique aspects of the group exercise sessions.[23] The benefits of group exercise can be conferred by structured programs and/or informal exercise sessions involving $\geq$ 2 individuals.
10. Genetic evidence suggests that humans and dogs have been coevolving together for as long as 135 000 years.[62] The mutual advantages conferred by this co-evolutionary process have been theorized to be related to cooperative hunting between domesticated wolves and our ancient hominin ancestors. Thus, both the dog and the human genomes may be specifically adapted to outdoor exercise involving cooperation between these 2 species.[63] Indeed, studies indicate that dog ownership can facilitate adherence to an exercise program, improve fitness, and reduce excess weight among individuals.[64]
11. Dancing was often performed as a part of rituals and celebrations, and is an ideal form of exercise that improves fitness and reduces stress.[65]
12. Sexual activity has always been an important aspect of human physical and social interaction. A frequency of sexual activity of $\geq$ 1 or 2 times per week correlates with multiple health benefits.
13. Ample time for rest, relaxation, and sleep was generally available to ensure complete recovery after strenuous exertion.

Conflict of Interest Statement

James H. O'Keefe MD, Robert Vogel MD, Carl J. Lavie MD, and Loren Cordain, PhD disclose no conflicts of interest.

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