

SHORT REPORT

Mediterranean diet as a natural supplemental resource for athletes and physical activity

E. Alonzo^{1,4}, M. Fardella^{1,4}, V. Cannizzaro¹, F. Faraoni¹, R. La Carrubba¹, S.S. Trillè¹, WDPP², GSMS-SItI³ and WFG-SItI⁴, and F. Leonardi⁵

Key words: Mediterranean diet, Sport, Doping prevention, Food education, Health literacy
Parole chiave: Dieta Mediterranea, Sport, Prevenzione doping, Educazione alimentare, Alfabetizzazione alla salute

Abstract

The WHO Global Action Plan on physical activity underlines the binomial “diet and physical activity” for the maintenance of well-being state. The adequate nutritional intake is required for sport and can be achieved by a well-adjusted diet without adding artificial food supplements, whose abuse can even represent a risk and appear as an antechamber of doping. Within a national doping prevention project, a peer education tool was realized in the form of a book and e-book, based on the principle of the Mediterranean Diet as an effective nutritional support in sport and physical activity. This health-literacy book contains recipes from all Italian regions revised for their capability to satisfy sport nutritional needs.

In the developed World, where abundance reigns and international trade grants a large variety of foods everywhere, the existing health problems arise from the excess of nutrition, worsened by inactivity, because the fatigue due to manual work has disappeared and people maintain their feeding habits; but such problems depend also on the diet composition, which in some

countries is too rich in meat and animal fats. Consequently, chronic degenerative pathologies and a progressive dependence of people in their third age are becoming more and more common. Against such a situation stands the availability of a traditional diet which is simultaneously healthy, relatively unexpansive and easily adaptable to the different needs. We

¹ Nutrition Food Hygiene Service (SIAN), Provincial Health Authority, Catania, Italy

² WDPP, Working Group Doping Prevention: V. Romano Spica, G. Savino, T. Trenti, C. Pasquarella, G. Liguori, P. Fallace

³ GSMS-SItI, Working Group on Movement Sciences for Health, Italian Society of Hygiene Preventive Medicine and Public Health: G. Baccari, G. Brandi, R. Bono, S. Calimeri, F. D'Aloisio, A. Dell'Eva, L. Fabiani, C. Frangella, G. Gervasi, A. Gradilone, A. La Torre, E. Leoni, G. Liguori, G. Privitera, S. Tafuri

⁴ WFG-SItI, Working Group Food Hygiene, Italian Society of Hygiene, Preventive Medicine and Public Health: E. Alonzo, P. Arras, D. Belotti, G. Bonaccorsi, A.G. Bonura, G. Cairella, V. Carreri, L. Chioffi, S. Cosentino, L. De Castelli, M. Di Giusto, M. De Giusti, T. Del Pio, S.A. Delia, R. Fabiani, M. Fardella, G. Giostra, G. Grosso, E. Guberti, P. Laganà, D. Macchioni, D. Nucci, M. Panunzio, F. Perdelli, V. Pontieri, G. Schiavano, R. Sciarrone, M. Tamburro, G. Troiano, G. Ugolini, M. Villarini, F. Vio

⁵ Italian Foundation for Food Education (FEI), Italy

are reminding the Mediterranean Diet, added in 2010 to the list of the Intangible cultural heritage of humanity by UNESCO (1). Several decades ago, it was initially studied and characterized by the North American biochemist and nutritionist Ancel Keys, the organizer in 1947 of the Seven Countries Study; who lived and made research for 40 years in Pioppi, on the Cilento coast of Southern Italy, and demonstrated the capacity of such a diet to grant people longer and healthier life (2). The Mediterranean Diet -as he named it-became popular after his reports that still maintain their relevance and success. He practiced Mediterranean Diet -and he died at the age of 100!- encountering a large popularity among cultured people, while he was not so easily accepted by those used to eat with an excess of fats and red meat, sugar-sweetened food and beverages, and also by a large majority of the youngsters, easily fascinated by the so called "American style Diet" and "fast food".

Several papers to date have demonstrated, in a convincing way, that a healthy and balanced diet and the constant practice of intense daily physical activity (amateur sports and spontaneous movements, necessary for the performance of all daily activities such as in-city transfers, study, work, hobby and recreational activities) represent the two main critical factors for maintaining an optimal state of well-being (3). As reported by the First Guidelines on the physical activity of the Ministry of Health and the Global Action Plan On Physical Activity 2018-2030 (2): "more active people for a healthier world" (4), the latest estimates for 2010 indicate that - in the world - 23% of adults and 81% of adolescents (aged 11-17) do not meet the WHO global recommendations on physical activity for health (4-7). Just the sedentary lifestyle (in addition to improper nutrition, obesity and smoking) is one of the 4 major risk factors associated with chronic non-communicable diseases

(NCDs) that the WHO, in the context of the 3rd EU Program 2014-2020 in Matter of Health, suggests should be the priorities of prevention and clinical-nutritional care plans (8). In 2017, the WHO proposed a "Global Strategy on Diet, Physical Activity and Health" involving public and private institutions to promote healthy lifestyles, to reduce the risks of improper nutrition and physical inactivity (9). The aim is to spread a positive health culture and to develop a network between institutions that shares objectives, roles, rules and methods of action and evaluation. In fact, to increase the expectation of healthy living and to improve the well-being and quality of life, it is necessary to promote: empowerment of citizens, actions on health determinants and health-promoting conditions. On the background of the concept: "More active people for a healthier world", it's important to implement in young people the "culture of movement", also based on a healthy, conscious and sustainable diet, preferably based on the principles of the Mediterranean diet, which is not a foreign-born diet, but comes from the century old experience of our ancestors. Adolescents and adults who lead an active lifestyle (play, attend school or go to work, practice recreational activities) and who carry out moderate/high amateur physical activity, need food supplies balanced in their bromatological composition and appropriate to satisfy the total daily energy expenditure. A correct intake of macronutrients, micronutrients and water (with adequate intake of carbohydrates), is supposed to allow better physical performance and, above all, the maintenance of a good state of nutrition and health. Unbalanced diets, with consequent altered balance between needs and supplies, among energy forfeited in the form of ATP, stored energy and dissipated energy, can establish sub-clinical or manifest conditions of malnutrition (by deprivation and/or partial excess) (10). To achieve an optimal

performance, it's essential to cover the total daily energy expenditure (with reference to carbohydrates); that's why the intake of food supplements, in the absence of specific deficiencies, is inappropriate. International literature shows how the immoderate consumption of food supplements exposes young people to a series of adverse effects, without evidence on the real performance improvement; it also can be considered as a sort of doping antechamber (11). These evidences aimed, -within a National Doping Prevention Project, that was promoted by the Ministry of Health- the realization of the book "The recipes of the sportsman: How to prevent doping with taste and tradition", based on Mediterranean diet assumptions and the rediscovery of regional traditional dishes, dedicated to people who perform sports activities (12). The target group are adolescents (11-17 years) and young adults (18 - 29 years) of both sexes who practice "moderate" (amateur) to "vigorous" (amateur high-level/competitive) physical activity, leaving behind athletes with a strong functional and competitive commitment. These recipes, inspired by the principles of the Mediterranean diet, report, as an added value, the calculation of the bromatological composition, able to satisfy the specific needs of the different phases: pre-race, post-race and rest rations. On the basis of the Reference Levels of Nutrients and Assumption of energy for the Italian population, LARN (IV Revision published in 2014) and starting from the evidence that in the pre-race an intake of carbohydrates is required higher than in the post-race, it was calculated that (13):

- In the pre-race, 55-60% of the kcal carbohydrates required for the meal should be provided, with a minimum intake of about 87 grams of carbohydrates in women and a maximum of 116 grams in men;

- In post-race/training, 45-50% of the kcal carbohydrates expected for that meal should be taken, with a minimum intake of 71 g of

carbohydrates in women and a maximum of 97 g of carbohydrates in men.

Special attention was paid to ensuring a proper intake of carbohydrates because glucose, provided by foods/drinks containing carbohydrates (C.I.), is the most important energy substrate for the body; vital organs (brain, liver, heart, etc..) and muscles are particularly greedy, to a point that the scientific literature -e.g.: LARN 2014 (13), Italian Standards for the Care of Obesity 2012/2013, from Italian Society of Obesity and Italian association of dietetics and clinical nutrition (14), IOM, Institute of Medicine in 2005 (15), and others - established the minimum daily quota of C.I. (130 g/day) for the brain to perform its vital functions. This minimum aliquot (which, preferably, should come from the consumption of cereals, fruit and, to a lesser extent, from smoothies / juices of fresh fruit, extracts of fresh fruit and vegetables/vegetables), increases significantly depending on the Level of Physical Activity (LAF) that is practiced and that depends on the duration, intensity and type of physical exercise performed (aerobic, anaerobic). Specifically, it was proposed to the Regional Referents of the Doping Prevention Project and to the NHS' SIANs (Food Hygiene and Nutrition Services of the Italian National Health Service) Network of the Prevention Departments to cooperate in order to develop (in partnership with different stakeholders, as hotelier institutes, physical education teachers, associations) regional health recipes for subjects who perform physical activity. It was also adapted considering the celiac subjects' needs. Afterwards, thanks to the support of an evaluation committee and of the colleagues from 27 Italian SIANs, the working group of the Catania SIAN divided the approximately 100 recipes collected from 16 Italian regions, into pre-competitive and post-competition

recipes, test rations and drinks, based on the specific nutritional composition. The booklet has been made available to teachers of Physical Education, health operators dealing with promotion of movement and physical activity, gym trainers and whoever could benefit from proposals of pre- and post-race recipes as an operational tool aimed at promoting the self-awareness and empowerment of young sportsmen. It is indeed a collection of recipes, but -most of all- it revealed as an effective health-literacy tool in peer education campaigns aimed to promote healthy lifestyles -primarily diet and physical activity- and prevent doping.

Acknowledgements

The authors are grateful to all those who participated in the designing, drafting and realizing the volume for their invaluable willingness and collaboration. In particular, the Authors wish to thank all Prevention Departments, SIAN, colleagues and coworkers for participating and collaborating at the realization of the book and the e-book, and in particular: B. Baccari (SIAN ASL Roma 2); L. Bioletti (SIAN ASL TO 3); V. Bonaccorso (Istituto Alberghiero Rocco Chinnici Nicolosi); S. Bonforte (Istituto N. Spedaliere di Catania); F. Brambilla (SIAN ATS Milano); G. Cairella (SIAN ASL Roma 2); F. Camilli (SIAN ASL Rieti); R. Carlà (SIAN ASL Lecce); V. Cataldo (Istituto Professionale per l'Enogastronomia e l'Ospitalità Alberghiera "I. e V. Florio di Erice); L. Cianni (Istituto Professionale per l'Enogastronomia e l'Ospitalità Alberghiera "I. e V. Florio di Erice); P. Cinque (I.S. Andrea Torrente - Casoria NA); C. Clemente (Istituto professionale per i servizi alberghieri e della ristorazione. I.P.S.A.R. di Casalecchio di Reno - Bologna); F. Collari (SIAN Distretto di San Cataldo); L. Contrino (SIAN ASP Siracusa); V. Covacci (SIAN ASL Roma 4); C. Della Giustina (SIAN AUSL Reggio Emilia); G. Di Benedetto (SIAN ASP Agrigento); L. Dallolio (Università di Bologna); E. Ebner (Scuola dello Sport - CONI Roma e Istituto Superiore di Formazione "Roberto Lombardi" FIT); E. Equizi (SIAN ASL 1 Avezzano Sulmona l'Aquila); A. Fabbri (SIAN AUSL Reggio Emilia); G.M. Fara (Università La Sapienza - Roma); T. Fara (Cuoco e Ricercatore Gastronomico); Romina Fani (SIAN AV5 ASUR); N. Favuzzi (SIAN ASL Bari); P. Fischer (SIAN ATS Milano); Evelina Flachi (Fondazione Italiana per l'Educazione Alimentare - FEI); M.G. Forte (SIAN ASL Bari); Carmela

Franchella (LILT Prov. Campobasso); M. Giampietro (Scuola dello Sport - CONI Roma e Istituto Superiore di Formazione "Roberto Lombardi" FIT); G. Gemmelaro (Istituto Alberghiero Rocco Chinnici Nicolosi); M. Greco (Istituto Alberghiero Antonello da Messina); F. Guida (Istituto Professionale per l'Enogastronomia e l'Ospitalità Alberghiera "I. e V. Florio di Erice); E. Iorio (LILT Prov. Campobasso); Rosa Ippolito (SIAN ASP Enna); M.P. Lanzoni (Istituto professionale per i servizi alberghieri e della ristorazione. I.P.S.A.R. di Casalecchio di Reno - Bologna); F. Lattanzi (SIAN USL Umbria 1); Erica Leoni (Università di Bologna); A. Loddo (SIAN ASSL Lanusei); A. Lorenzini (Università di Bologna); G. Lorusso (Università di Bologna); L. Lucchin (Dipartimento Prevenzione AS dell'Alto Adige); C. Luppi (SIAN AUSL Reggio Emilia); T.M. Selvaggi (SIAN ASReM Campobasso); S. Marciantie (Istituto Alberghiero Rocco Chinnici Nicolosi); L. Montalbetti (IPSIA Majorana, Sede Melzo); A. Moscatiello (I.P.S.E.O.A. "E. V. Cappello"- Piedimonte Matese); G.M. Naclerio (SIAN ASL 1 Liguria); N. Nante (Università degli studi di Siena); C. Sandels Navarro (Fondazione Italiana per l'Educazione Alimentare - FEI); V. Occhipinti (Istituto Professionale per l'Enogastronomia e l'Ospitalità Alberghiera "I. e V. Florio di Erice); Pina Pacella (SIAN ASL Lecce); L. Palomba (I.P.S.E.O.A. "E. V. Cappello"- Piedimonte Matese); M. Palumbo (SIAN ASL Napoli 2 Nord); A. Petralia (SIAN ASP Agrigento); Y. Persi (Medicina dello Sport AUSL Modena); A. Purrello (SIAN ASL 1 Liguria); M.E. Raiti (SIAN ASP Catania); D. Regele (Dipartimento di Prevenzione AS Alto Adige); C. Rendo (SIAN ASL Alessandria); B. Rosetti (SIAN AV5 ASUR); G. Saluto (SIAN ASP Trapani); S. Santolli (SIAN ASL Alessandria); M.D. Sichel (Istituto Alberghiero Rocco Chinnici Nicolosi); D. Sorbelli (SIAN USL Umbria 1); R. Toscano (SIAN Distretto di San Cataldo); D. Tiso (Ospedale Privato Accreditato "Villa Maria", Rimini); S. Toselli (Università di Bologna); M.L. Tondi (Istituto Superiore di Formazione "Roberto Lombardi" Federazione Italiana); F. Turiano (SIAN ASP Messina); F. Ubaldi (Università Foro Italico - Roma); F. Valeriani (Università Foro Italico - Roma); M. Valvo (SIAN ASP Siracusa); A. Vanzo (SIAN ULSS 8 Berica Vicenza); F. Vietti (SIAN ASL TO 3).

The authors, contributors and their collaborators have renounced copyright and have no conflicts of interest to declare.

The present work was supported by the Ministry of Health (Programma di ricerca e di formazione/informazione 2016 sui farmaci, sulle sostanze e pratiche mediche utilizzabili a fini di doping nelle attività sportive. Progetto 2016-3 CUP H82F16000170001 – "Prevenzione del doping elaborazione di uno strumento permanente di educazione coordinato dai dipartimenti di prevenzione del SSN").

Additional documents and the Italian version is available at: www.sitinazionale.it/BDS/muoversi and/or at link www.progettodoping.it

Riassunto

La dieta Mediterranea come integratore naturale per sport e attività motoria

Il piano globale d'azione dell'OMS sull'attività fisica sottolinea l'importanza del binomio “*dieta e adeguata attività motoria*” nel mantenimento della salute. L'apporto nutrizionale necessario per chi pratica sport e attività motoria può essere raggiunto con una dieta equilibrata, senza la necessità di assumere integratori alimentari, il cui consumo non giustificato può addirittura essere considerato un'anticamera del doping con una serie di effetti avversi. All'interno di un progetto nazionale di prevenzione del doping, è stato realizzato uno strumento di peer education in forma di libro cartaceo ed elettronico. Il volume contiene ricette dalle diverse regioni, riadattate per soddisfare le richieste nutrizionali di chi pratica sport e fornire elementi di alfabetizzazione alla salute.

References

1. UNESCO. Mediterranean diet. Available on: <https://ich.unesco.org/en/RL/mediterranean-diet-00884> [Last accessed: 2019, Jun 25].
2. Keys A. How to eat well and stay well the Mediterranean way. Doubleday, 1975.
3. Romano-Spica V, Macini P, Fara GM, Giammanco G; GSMS - Working Group on Movement Sciences for Health Italian Society of Hygiene Preventive Medicine and Public Health. Adapted Physical Activity for the Promotion of Health and the Prevention of Multifactorial Chronic Diseases: the Erice Charter. *Ann Ig* 2015; **27**(2): 406-14.
4. Ministero della Salute. Prime Linee di Indirizzo Nazionali sull'attività fisica. Available on: http://www.salute.gov.it/portale/news/p3_2_1_1_1.jsp?lingua=italiano&menu=notizie&p=dalministro&id=3668 [Last accessed: 2019, June 25].
5. Global Action Plan On Physical Activity 2018-2030: more active people for a healthier world. Geneva: WHO, 2018. Available on: <https://apps.who.int/iris/bitstream/handle/10665/272722/9789241514187-eng.pdf> [Last accessed: 2019, June 25].
6. World Health Organization (WHO). Global recommendations on physical activity for health. Geneva: WHO, 2010. Available on: <https://www.who.int/dietphysicalactivity/global-PA-recs-2010.pdf> [Last accessed: 2019, June 25].
7. World Health Organization (WHO). Global action plan for the prevention and control of noncommunicable diseases 2013–2020. Geneva: WHO, 2013. Available on: https://www.who.int/nmh/events/ncd_action_plan/en/ [Last accessed: 2019, June 25].
8. Wollgast J. Recent developments and publications. Meeting of the EU Platform for Action on Diet, Physical Activity and Health. 9 March 2017, Brussels, BE. Available on: (https://ec.europa.eu/health/sites/health/files/nutrition_physical_activity/docs/ev_20170309_co12_en.pdf) [Last accessed: 2019, June 25].
9. Leonardi F, Portelli G, Morini P. La valutazione del bilancio energetico e del fabbisogno nutrizionale. In: *Dietetica e Nutrizione. Clinica, terapia e organizzazione*. 2.ed. In: Fatati G, Amerio ML, eds. Roma: Il Pensiero Scientifico Editore, 2012: 3.
10. Backhouse SH, Whitaker L, Petróczi A. Gateway to doping? Supplement use in the context of preferred competitive situations, doping attitude, beliefs, and norms. *Scand J Med Sci Sports* 2013; **23**(2): 244-55.
11. Romano Spica V, Di Rosa E, Savino G, et al. Erice 2018 Charter on the role of the National Health Service in the prevention of doping. *Ann Ig* 2019; **31**(6): 523-32.
12. *Le ricette dello Sportivo: come prevenire il doping con gusto e tradizionalità*. Roma: Antonio Delfino Editore, Dicembre 2018.
13. LARN 2014. Reference Levels of Nutrients and Assumption of energy for the Italian population, LARN (4th Rev published in 2014) Available on: http://www.sinu.it/html/pag/tabelle_larn_2014_rev.asp [Last accessed: 2019, June 24].
14. Italian Society of Obesity and Italian Association of Dietetics and Clinical Nutrition (SIO/ADI). Italian Standards for the Care of Obesity SIO/ADI 2012/2013. Available on: <https://www.consulta-scv.it/sites/default/files/Volume%20Standard%20di%20cura%202012.pdf> [Last accessed: 2019, Jun 25].
15. Institute of Medicine (US) and National

Research Council (US) Committee on the Framework for Evaluating the Safety of Dietary Supplements. Dietary Supplements: A

Framework for Evaluating Safety. Washington (DC): National Academies Press (US), 2005.

Corresponding author: Dott. Elena Alonzo, Nutrition Food Hygiene Service (SIAN), Provincial Health Authority, Catania, Via Tevere 39, 95027 Cerza San Gregorio, Italy
e-mail: elena.alonzo@aspct.it

Daily physical activity and sharing meals with others are vital elements. Together, they can have a profound effect on your mood and mental health and help you foster a deep appreciation for the pleasures of eating healthy and delicious foods. Of course, making changes to your diet is rarely easy, especially if you're trying to move away from the convenience of processed and takeout foods. But the Mediterranean diet can be an inexpensive as well as a satisfying and very healthy way to eat. Making the switch from pepperoni and pasta to fish and avocados may take some effort, but you could soon The Mediterranean diet has been linked to a number of health benefits, including reduced mortality risk and lower incidence of cardiovascular disease. Definitions of the Mediterranean diet vary across some settings, and scores are increasingly being employed to define Mediterranean diet adherence in epidemiological studies. Some components of the Mediterranean diet overlap with other healthy dietary patterns, whereas other aspects are unique to the Mediterranean diet. In a somewhat reductionist approach, the traditional Mediterranean diet can be considered as a mainly, but not dogmatically, exclusive plant-based dietary pattern. Of note, olive oil is a plant product (in fact a fruit juice) and so is wine. Despite the fact that the Mediterranean diet is well documented and acknowledged as a healthy diet(Reference Katz and Meller 38), paradoxically, it is being abandoned, mainly by the young generations in most Mediterranean countries(33). Southern and Eastern Mediterranean countries are passing through a "nutritional transition" in which problems of undernutrition coexist with overweight, obesity and diet-related chronic diseases(Reference Belahsen 39). local and eco-friendly food products, conviviality, adequate rest and regular physical activity(Reference Dernini, Berry and Bach-Faig 40 , Reference Bach-Faig, Berry and Lairon 41). The Mediterranean diet might help you lose weight. While some people fear that eating a diet like the Mediterranean diet that is relatively rich in fats (think olive oil, olives, avocado and some cheese) will keep them fat, more and more research is suggesting the opposite is true. But they also report the research has limitations and that more intervention studies are needed to confirm their findings. You'll find lots of free Mediterranean diet resources on the Oldways website, including an easy-to-understand food pyramid; a printable grocery list; gender- and age-specific tips on making the Mediterranean switch; a quick-read "starter" brochure; a recipe newsletter; and even a glossary defining Mediterranean staples, from bruschetta to tapenade.