

# On the History of Fatigue

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## Abstract

This article is following the author's chapter (in German), *Zur Geschichte der Müdigkeit*, Iris-Katharina Penner (Hrsg.), *Fatigue bei MS Hippocampus Verlag 2008*. Fatigue is a very common symptom in a variety of neurological syndromes, especially in multiple sclerosis (MS), being reported by about half of patients. It may be disabling although not visible and have negative consequences on working activity and daily life. There are no objective measures of fatigue – as a symptom it is essentially based on subjective complaints. Even if fatigue may be influenced by motor disturbances and depression it is largely independent from both and from peripheral mechanisms, e.g. muscular disuse and deconditioning, joint abnormalities, metabolic changes of muscular fibres etc. All available data indicate that fatigue is a 'central' phenomenon, due to multiple causes e.g. impairment of volitional drive to the descending motor pathways with dysfunctions of circuits between thalamus, basal ganglia and frontal cortex. The problem of excessive and unexplained fatigue has been common from the middle of the nineteenth century to the present day. Today, both unexplained fatigue and fatigue occurring as a symptom of illness are recognized as being serious enough to limit physical functioning and having a negative impact on quality of life/ Research supports the involvement of multiple dimensions, with physiological, psychological, and psychosocial factors contributing to the experience of fatigue. Theories on the nature of fatigue from the last century are closely echoed by contemporary views and a recurring theme in research is the need for a biopsychosocial approach, incorporating physiological, psychological, and psychosocial factors.

## Keywords

Fatigue, tiredness, multiple sclerosis, history

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Work and its political and economic dimensions were of central interest in the sociological and medical literature in the 19th century. With its different forms of organisation, its meaning and productive potential it was tried, by the end of the century, to solve the 'labour question' with help of science: body movements and rhythms were submitted to detailed laboratory investigations, were examined by new measuring technologies and recorded photographically. This attempt to substitute with science for the moral discussions is especially highlighted in the discussion about fatigue, tiredness and Ermüdbarkeit by European physiologists after 1870. Though portrayals about this phenomenon are already found in numerous literary representations of 'lassitude', 'weakness', in French: 'ennui' in German: 'Mattigkeit' and 'Weltschmerz', they found entrance in the medical literature only late in the 19th century.<sup>1</sup> Thus descriptions are found about pitifully French schoolboys: 'Muscles without energy support the body only painfully, the face is pale, a case without nerves, the posture directed downwards under heavy weight. All external aspects of the child convey the impression of a plant which longs for air and sunlight. All functions of the organism are doomed'.<sup>2</sup>

Fatigue became the most obvious sign of external restrictions of body and mind, the most reliable indicator for the need to keep its forces and to prevent abuse. The paradigm change consisted in the fact that the former view of laziness as reason for the opposition against work was substituted with fatigue and tiredness.

Physiologists and discoverers such as Etienne-Jules Marey or Angelo Mosso from Turin, whose classic *La Fatica* in 1891 was enormously influential, tried to describe for the body in work what Helmholtz, Lord Kelvin or Clausius had achieved in describing for the universe: to set up dynamic laws of energy preservation and with it of the tiredness by rigorous experiments and new measuring technologies.

During the 1890s there was an international avant-garde of fatigue experts, laboratory specialists and social hygienists who worked in this new field of experience with fatigue in which science and politics met.

The body without fatigue became an utopia of the 19th century. By its end tiredness and exhaustion were constant menaces and challenges compared with the idea of progress, the big fear of the time. Nietzsche, for example, equated Fatigue with modernity: its time being characterised by disintegration and accordingly by uncertainty<sup>3</sup>; Honoré de Balsac planned to write a pathology of social life to show how people waste their forces by too much expenditure. Accordingly, by the end of the century, 'fin-de-siècle' in France, apocalyptic visions about the end of the world were also in vogue.

Before 1860 there are hardly any medical or scientific studies about fatigue, around the turn of the century and afterwards, however, there are

already hundreds of such studies on muscle tiredness and fatigue as well as on 'nervous exhaustion', 'neurasthenia' etc, which were understood as diseases of energy – 'maladies de l'énergie'.

In 1875 Georg Poore<sup>4</sup> published an article in the *Lancet* in which he made a distinction between general and local, acute and chronic symptoms of the fatigue.

In France Carrieu, in his pioneering work in 1878 *De la fatigue et de son influence pathogénique* (On fatigue and its pathogenic influence<sup>5</sup>, complained about the fact that the concept fatigue appeared in none of the big medical dictionaries of his time and that all definition attempts have remained purely subjective and offered the following definition: 'Un trouble dans l'activité des éléments anatomiques, causé par un fonctionnement exagéré au point que la réparation y est momentanément impossible', [an activity disturbance of anatomical elements, caused by exaggeration of functions a restoration of which is not any more possible].

Fatigue became to be seen as a physical as well as a moral disturbance, as a sign of weakness and of lacking willpower respectively.<sup>6</sup> Fatigue was looked at as an expression of a breakdown of physical and mental functions, increasingly as a 'modern' disturbance of overwhelming social and physical consequences.

The experiments of the chemist and physiologist Wilhelm Weichardt 'On fatigue provoking substances' caused a big sensation at the university of Erlangen. He announced in 1904 to have invented a vaccination against fatigue. He was convinced that fatigue provoking substances accumulated in the body could lead to stupor and to death. Mosso in 1891 was convinced to be able to transfer fatigue from the blood of exhausted and tired animals on to other animals. During the 1st World War, experiments with substances supposedly directed against the fatigue toxins were carried out on soldiers, however, with time all these experiments turned out to be artefacts. At least, they led to the more exact examinations of other 'nervenstimulants' e.g. tea, coffee and cocaine. During the following years there was a large body of literature about physical and mental fatigue, new apparatuses were introduced, to quantify these symptoms more exactly. The psychiatrist Kraepelin in 1901<sup>7</sup> introduced a differentiation between 'fatigue' ('Müdigkeit') and 'fatigability' ('tiredness'). He also suggested quite concrete measures for the class-schedules in schools to prevent the breakdown of the child as a worker.

Later the expression 'neurasthenia', which had been introduced by the New York doctor Georg Miller Beard during 1860s, became popular and should include 'all forms and kinds of nervous exhaustion in the brain and spinal cord'. He saw the cause in an 'overpressure of the higher nerve centres' and feared that this pathology was especially typical for the Americans and called neurasthenia the 'Central Africa of medicine: an undiscovered territory into which only few people dare to enter'<sup>8,9</sup> (Beard 1869). In the 1980s the 'Beard's illness', neurasthenia, was by far the most widespread fashion diagnosis which was named also with such terms as 'névrotisme', 'irritation spinale' or 'neuropathie cérébro-cardiaque'<sup>6</sup> (see Rabinbach, 1990). While in America following Beard neurasthenia was considered to be the cultural shock of the modern

age, in France under the influence of Charcot and his pupils fatigue was rather viewed as an inherited degenerative illness ('La famille névropathique'). The most important textbook about neurasthenia in the Fin-de-siècle in France was that of Dr. Achilles-Adrien Proust,<sup>10</sup> the father of the great novelist Marcel Proust. He was a director for years in the health ministry in Paris and wrote in 1897, together with Gilbert Ballet 'L'hygiène du neurasthénique'[Hygiene of the neurasthenic]. These authors also considered neurasthenia above all to be caused by the moral and intellectual pressure of the modern age. They thought that neurasthenia depended directly on the intellectual work since this diagnosis was very rare among physically working people and occurred almost exclusively in the 'cultured classes'. They did not go so far as to consider 'brain work' by itself to be the cause but rather the moral pressure going along such activity.

Neurasthenia was not only an illness, but often was seen as a big imitator of other illnesses. Proust mentions that even his most intelligent patients could describe their disturbances mostly only disjointedly and excessively for which Charcot introduced the concept 'L'homme au petit papier' [The man of small papers], that is that neurasthenics often appeared with slips of paper or manuscripts on which they had written or taped their discomfort almost endlessly.

The book of the Swiss neurologist Paul Dubois *L'éducation de soi-même*<sup>11</sup> [The education of oneself] became particularly popular in 1909 in whom he propagated the 'Socratic dialogue' as a therapy principle and anticipated the paradoxical intention as a therapy form which was popularised later by Viktor E. Frankl. He writes that 'in the suite of the works of George Beard a new nervous disease [found] her way to Europe and starts to spread out like an epidemic. Neurasthenia is in every one's mouth, it is the new fashionable complaint'. Whole libraries subsequently were filled with treatises about causes, theories of the neurasthenia and recommendations as to the treatment of this 'illness of willpower' which on also occasions was called 'Abulia'. Historically four traditions of interpretations of the neurasthenia concept can be put forward: 1. a vague symptom of 'general nervousness', 2. the male counterpart of the female hysteria, 3. a concept for less serious depression states and 4. a label for chronic states of exhaustion.<sup>12</sup>

In that time 'everything can be explained by neurasthenia: Suicide, decadent art, clothes, adultery'.<sup>13</sup> The assessment of neurasthenia showed cultural differences, the diagnosis found no recognition among the 'Giants of Queen Square' e.g. Gowers, Gordon Holmes, Ferrier, Buzzard or Kinnier Wilson.<sup>13</sup>

It was said that the diagnosis was made 'for the comfort of the relatives and for the peace of mind of the patient', while the stigma of a psychiatric illness and the need of a hospitalisation in a psychiatric institution should be avoided.

Fatigue cannot be measured objectively. This was realised already at the beginning of the 20th century in spite of intensive efforts 'the noteworthy changes of the nerve cells which had been found and which very much came to fashion and a pride for the patients as well as for diagnosticians, could not be replicated and the conception of nerve cell exhaustion could not be held'. Increasingly criticism of this 'mechanical symbolism' was

brought forward from descriptions of neurasthenia and the futility of purely anatomical illness concepts was deplored. With regard to social concepts the main focus of interpretations changed from strain to under-demand and soon, however, bad housing conditions, insufficient dental hygiene and Icecream consumption were also held responsible for the widespread fatigue.

From an historical perspective, it is interesting to observe how the considerations of class dependence of neurasthenia changed: was it even for Freud and Kraepelin still 'an illness of excellent intellectuals, her victims are leaders and masters, captains of industry ... particularly many doctor colleagues affected. ...' Those who expressed themselves as suffering from neurasthenia helped to legitimise neurasthenia as an illness. Just as the consideration of class affiliation swayed the therapeutic recommendation changed from complete bed rest to more active muscular activity. Interestingly the aetiology was considered to be associated with the class affiliation: the more the cause was held as 'organic', the more the authors insisted on a preponderance of the illness in the upper social layers, on the demarcation of hysteria as an archetypical illness of women, and a preference of male gender and the 'civilised races'.<sup>13</sup>

As for separation from hysteria it was held that the neurasthenics 'would do everything in order to get better and are longing with all force for good health if only they knew, how it might be attained'. Accordingly they would, in contrast to hysterics, also co-operate always well with the doctors. In the first half of the 20th century the concept of neurasthenia became increasingly less important because on the one hand a neuro-pathological base was absent. Rest cures turned out favorable mainly for psychological reasons for and the distribution within social classes changed. Subsequently almost every infectious agent was held responsible for causing fatigue, e.g. Brucellosis, almost all possible viruses and Rickettsia.<sup>13</sup> Real epidemics of fatigue were also described, especially strikingly one in Los Angeles county hospital in 1934 and then in the Royal Free Hospital in London 1955 and in both cases only medical staff of these hospitals were affected, not their patients. Both episodes were associated with atypical poliomyelitis which, however never was proven. Later interpretations concentrated upon 'transferred emotional stress' and 'mass hysteria'.

In the second half of the 20th century publications appeared about 'myalgic encephalomyelitis' as a new illness entity of the fatigue<sup>14</sup> and this gave rise to the diagnosis of 'Chronic Fatigue syndrome'<sup>15</sup>, widespread even today. Later, symptom criteria were put forward for chronic fatigue syndrome<sup>x</sup> with limitations of short-term memory, of concentration time, sore throat, sensitive lymphatic glands of neck and shoulder, muscle pains, pains of several joints without swelling and redness, headaches of a new type, pattern or severity, no rest by sleeping, deterioration persisting for more than 24 hours after stress. In spite of intensive search for etiologic factors, no single agent could ever be held responsible up to now, so that the Chronic Fatigue syndrome is encoded in the new classification system of the ICD-10 GM version 2008 as a R 53 and is understood as a 'disturbance of neuro-immunological regulation'. Sometimes also traumatic strains during infancy and childhood are considered as being causally connected.<sup>16</sup>

The essential criteria for this classification and definition are persistent and tantalising feelings of exhaustion and persistent fatigue after low-grade mental or physical exercise and the duration of the disturbance must amount at least three months.<sup>17</sup> Thus today Chronic Fatigue syndrome is the neurasthenia variation most significant present, but overlapping to persistent a large degree with the fibromyalgia and so called: multiple chemical sensitivity.

Neurasthenia lost its claim to organicity and thereby its legitimacy because Beard's explanations cannot be held for scientific reasons and because increasingly psychoanalytic views of the mental causes of the neuroses spread and became more popular. Therefore, other illness models were formed based on the pool of symptoms which correspond again to the changed views of organic illnesses. Chronic Fatigue and its variations probably keep their role as socially legitimate illness models and are used furthermore as a terminological and diagnostic label, as long as the question of organicity cannot be decided.

No matter whether one single cause of fatigue from which so many patients, are suffering can be ever be found – there remains a special challenge for every medical activity to find solutions for problems in the border area between neurology and psychiatry. Fatigue can be considered as a window through which brain functions can be examined more in general.<sup>18</sup> ■

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