

## Preface

Epilepsy is a group of non-communicable neurological disorders characterized by recurrent epileptic seizures.[10] An epileptic seizure is the clinical manifestation of an abnormal, excessive, and synchronized electrical discharge in the neurons.[1] The occurrence of two or more unprovoked seizures defines epilepsy.[11] The occurrence of just one seizure may warrant the definition (set out by the International League Against Epilepsy) in a more clinical usage where recurrence may be able to be prejudged.[10] Epileptic seizures can vary from brief and nearly undetectable periods to long periods of vigorous shaking due to abnormal electrical activity in the brain.[1] These episodes can result in physical injuries, either directly, such as broken bones, or through causing accidents.[1] In epilepsy, seizures tend to recur and may have no detectable underlying cause.[11] Isolated seizures that are provoked by a specific cause such as poisoning are not deemed to represent epilepsy.[12] People with epilepsy may be treated differently in various areas of the world and experience varying degrees of social stigma due to the alarming nature of their symptoms.[11]

The underlying mechanism of an epileptic seizure is excessive and abnormal neuronal activity in the cortex of the brain,[12] which can be observed in the electroencephalogram (EEG) of an individual. The reason this occurs in most cases of epilepsy is unknown (cryptogenic);[1] some cases occur as the result of brain injury, stroke, brain tumors, infections of the brain, or birth defects through a process known as epileptogenesis.[1][2][3] Known genetic mutations are directly linked to a small proportion of cases.[4][13] The diagnosis involves ruling out other conditions that might cause similar symptoms, such as fainting, and determining if another cause of seizures is present, such as alcohol withdrawal or electrolyte problems.[4] This may be partly done by imaging the brain and performing blood tests.[4] Epilepsy can often be confirmed with an EEG, but a normal reading does not rule out the condition.[4]<sup>1</sup>

In the present book, fourteen typical literatures about Epilepsy published on international authoritative journals were selected to introduce the worldwide newest progress, which contains reviews or original researches on Epilepsy. We hope this book can demonstrate advances in Epilepsy as well as give references to the researchers, students and other related people.

The Editorial Board of Academic Archives

Scientific Research Publishing

March 3rd, 2025

---

<sup>1</sup> <https://en.wikipedia.org/wiki/Epilepsy>