Review articles are an excellent means at learning about a condition or treatment. An author will collect relevant literature and will write a summary. Review articles are not, however, Evidence-Based. This is because authors are not precluded from adding their own opinions in the article. And, there are no guidelines instructing them on the definition of what can be considered as “relevant literature” when collecting material for the review.
Systematic Reviews are review articles that contain **explicit criteria** for selecting the studies to be included. These criteria specifically guide the authors as to what findings they can and cannot include in the review, thereby lessening the probability that bias will influence the conclusions. This flow chart represents the steps involved in creating a Systematic Review, including the critical inclusion/exclusion step which discards studies containing potentially unsound methods. Here’s how it works: First, the authors conduct a thorough literature search, looking not only at published data but also at current trials and conference proceedings. Next, each author will review all of the collected materials against the specified criteria. Then, the authors compare notes and for materials where there is disagreement, the authors discuss until a decision is made by the whole as to whether or not the material will be included. Once the excluded material has been set aside, the authors conduct a critical appraisal of each paper. Only then do the authors write the findings. Sometimes, a Systematic Review will include numerical data that can be statistically combined to express more global outcomes. When this happens, the result is a Meta-Analysis. Meta-Analysis are usually expressed visually as Forest Plots, which will be explained on the next slide. The Cochrane Library is a large collection of only systematic reviews. However, Systematic Reviews can also be found in many of the major medical journals such as JAMA and the New England Journal of Medicine. When searching for Systematic Reviews, be careful using the Systematic Review limit in PubMed as results will often include papers that are NOT systematic in nature.
This is an example of a Forest Plot from a Cochrane Systematic Review on Vitamin D and prevention of falls in the elderly. Five primary studies met the criteria to be included in this Systematic Review. These are represented by the authors last name and date of the study here. The next column numerically indicates the Odds Ratios and Confidence Intervals of each study. The horizontal line at the bottom of the graph is the scale, in this case representing the Odds Ratios. The vertical line is the “Line of No Effect”. The boxes correspond to the results in column two. The size of the box indicates the size or “n” of the study. The wings extending from the box indicate the Confidence Intervals. Any data that is represented to the left of the Line of No Effect indicates that the intervention was favored in that study. Data to the right of the line indicates that the control was favored. Any study that has results, including Confidence Intervals, on or on both sides of the Line of No Effect did not demonstrate statistical significance. In this example, only one study, Gallagher et. al., demonstrates statistical significance. The diamond at the bottom of the graph demonstrates the pooled results of all of the data from the five studies. In this case, the diamond does NOT cross the Line of No Effect. This shows that when examined individually, four of these five studies did not statistically demonstrate the efficacy of Vitamin D to prevent falls. But, when pooled in the Systematic Review, the global results of all five studies DID demonstrate statistical significance.