Please circle all sensations you feel when you say you feel dizzy:

<table>
<thead>
<tr>
<th>spinning</th>
<th>lightheaded</th>
<th>nausea</th>
<th>off balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>funny in the head</td>
<td>pressure</td>
<td>blurred vision, but I can see clear</td>
<td>blurred vision and I cannot see clear</td>
</tr>
<tr>
<td>things have to catch up</td>
<td>rolling</td>
<td>floating</td>
<td>moving</td>
</tr>
<tr>
<td>vibrating</td>
<td>swaying</td>
<td>could pass out</td>
<td>do pass out (pass out means to go unconscious)</td>
</tr>
<tr>
<td>heavy head</td>
<td>funny in the eyes</td>
<td>pulled to left or right</td>
<td>full in the head</td>
</tr>
<tr>
<td>like I could spin (pre-spin) Here it comes…but it doesn’t.</td>
<td>woozy</td>
<td>like I could loose my balance</td>
<td>like I could become dizzy</td>
</tr>
</tbody>
</table>

Please write other types of dizziness you feel in the boxes provided

Andy Beltz, PT
Aultman Tusc Therapy Dizziness and Balance Program
330-363-6215

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### Beware of the trap of “IT”

Please write the circled words in the spaces provided below:

<table>
<thead>
<tr>
<th>↓</th>
<th>↓</th>
<th>↓</th>
<th>↓</th>
<th>↓</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1. What do you mean by dizzy?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#2. Does this sensation get worse rolling in bed?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does this sensation get worse when you lie down in bed?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does this sensation get worse when you bend over?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the sensation get worse when you tilt your head back?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#3. How long does it last now?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How long did it last at onset?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#4. When did it first begin?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When was the last time you felt it?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>#5. Do you avoid moving for fear of causing it?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Comparison by trigger:

<table>
<thead>
<tr>
<th>Dizziness when:</th>
<th>BPPV</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>up from bending over</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>sitting up (at normal speed)</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>rolling over to at least one side (must roll to both sides)</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>bending over</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>tilting head back</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>tilting head down</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>lying down</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

BPPV and OH comparison by timing:

<table>
<thead>
<tr>
<th>Duration</th>
<th>BPPV</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>seconds</td>
<td>yes</td>
<td>yes (more likely minutes though) speed and position dependent</td>
</tr>
<tr>
<td>minutes</td>
<td>yes (less likely)</td>
<td>yes</td>
</tr>
</tbody>
</table>

BPPV and OH comparison objectively:

<table>
<thead>
<tr>
<th>Finding</th>
<th>BPPV</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nystagmus</td>
<td>yes</td>
<td>only right before passes out (vertical)</td>
</tr>
<tr>
<td>BP drop</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>off balance standing</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Dix Hallpike and sidelying tests</td>
<td>positive</td>
<td>negative</td>
</tr>
<tr>
<td>Roll Tests</td>
<td>Positive</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Contact: Andy Beltz, PT if you have questions- Aultman Tusc Therapy: 330-363-6215
Dizzy

Ears
- Peripheral Vestibular System
  - Vestibular Hypofunction
    - Virus, head injury, lack of blood flow, Migraine, Aging, Chronic Meniere's Disease
  - Vestibular Hyperfunction
    - Benign Paroxysmal Positional Vertigo (BPPV), Acute Meniere's Disease

Eyes
- Metabolic
- MEDS
- Cardiovascular System
- Sensors, muscles, joints

Brain

Central Vestibular System
- Migraine, MS, TIA/CVA, MSA, Arnold Chiari Malformation, Brain Tumors, Head Injuries, Dissecting Arteries/Aneurysms, Mad Cow Disease, Parkinson Disease, etc

Vestibular System
- Vestibular Rehab (VR) works best with stable peripheral problems
- Does not work as well with unstable problems

Four Types
- Adaptation
  - For Unilateral Vestibular Hypofunction
- Habituation
  - For both peripheral and central vestibular problems
- Substitution
  - For both peripheral and central vestibular problems
- Repositioning
  - For BPPV

Refer back to MD

Vestibular Rehab (VR) works best with stable peripheral problems
Does not work as well with unstable problems

Refer back to MD

fightdizziness.com
1. a back and forth thing
2. A ball rolling around in my head
3. A bang
4. A couple of bubbles off
5. A couple of hairs off
6. a film over my eyes
7. A follow spin
8. A light feeling
9. a little whoopee
10. A marble moves from right side of head to the center
11. A not good feeling comes over me
12. A short circuit
13. A total emptiness
14. a wash-it comes
15. a wash-it comes; shifted
16. a web in my head with something in the middle
17. a wiggle
18. a wooze
19. abnormal feeling in head
20. Air headed
21. airy
22. Alice down the rabbit hole
23. bed goes around
24. bed is continuing to roll
25. Bed is going to fall off the earth
26. blip
27. blurred vision
28. bobbly thing/bobble head
29. body doesn’t want to go that way
30. Body is disintegrating
31. bottom dropped out
32. Brain blinked
33. brain did a flop around in circle
34. brain doesn’t feel like it is working right
35. brain is a bobber in the ocean pitching back and forth sloshing
36. brain is cut in half (around circumference of head from eyes down I’m stationary-from eyebrows up it spins and rocks).
37. brain is floating
38. brain is like mush
39. Brain is loose in my head
40. brain is moving in my head
41. brain is not right
42. brain is waving to the left side of my head
43. brain isn’t there anymore
44. Brain not working with body
45. Bubbly
46. buggy in my head
47. busy up here
48. buzzed; ½ buzzed
49. can’t shut peripheral vision off
50. car lifted then floated (while driving)
51. car sick
52. Cartoon things trailing
53. circles on the ceiling
54. clouds floating in my head
55. cloudy/everything is in a cloud
56. cobwebs up there
57. confused
58. contents in head moving around
59. cooo cooo cooo cooo
60. cotton in my head
61. could fall
62. could fall off the earth
63. could spin/could get dizzy/about to be dizzy
64. croggy
65. dancing
66. dark and weak
67. Dinginess/dingy
68. discomoobered
69. discomoobled
70. disconnected
71. disorientation
72. Dizzy
73. doddly
74. don’t know where I’m at
75. doppy
dopy

drunk

empty head

equilibrium is off

Everything all running together

Everything all together

everything flops

Everything folding over

everything goes haywire

Everything is cut- sudden pauses

everything is leaving your head

Everything isn’t clicking

everything shifted

Everything turned upside down

everything went to the top

eyes are all over the place

eyes are jerking

eyes bobble

eyes can’t keep up with head

eyes don’t catch up with my head

eyes don’t focus

eyes feel screwy

eyes rolling around

eyes slam shut and things moving

Fireworks in my brain

fizzy-like poured 7 up into a glass

flighty

flipping

floatie/floating

Floor and ceiling switch places

floor came up at me

floor goes down then up

flutter in head

foggy/a fog

full of air up there/air headed

funky

funny in eyes

funny in head

fuzzy

giddy

Going into the black hole

goofy

Gray

grogy

Gyroscope isn’t keeping up with it

half spin

half way drunk

hangover

hard to walk straight

hazy

head bobbing on water

head doesn’t know where my feet are

Head doesn’t realize body has moved yet

head doing weird stuff

head feels like a snow globe

head is a bouncy ball

head is about to blow/explode

head is blowing up then going down

head is everywhere

head is filled with Jell-O

head is filling up

head is hard to hold up

head is in a drier

head is in a fish bowl

head is plugged up

head is swelled

head is tied to a string bouncing like a balloon

head movement didn’t match eye movement

head on a swivel

head rush

head sinks as in quick sand

Head switches one side goes to the other

head wants to take off to the left

heavy head

hollow (like it’s)

I can’t focus

I can’t trust myself

I shake all over
154. I want to take my eyes out and rest them
155. I’m being pushed into the mattress
156. I’m goofy
157. I’m not me
158. I’m not sharp
159. I’m on the ocean riding waves
160. I’m once removed from the hear and now somewhere
161. I’m somewhere else
162. I’m way back in here somewhere
163. if you drink too much
164.iffy
165. in a barrel looking out
166. in a whirlpool
167. in and out
168. Inner ears are moving
169. Inside my skull was a cap
170. it comes up
171. it just gets dark
172. it moves then jumps back
173. it’s going to flip me/flipping
174. it’s in my eyes
175. it’s in the back of my head
176. jarring everything up and down
177. jelly head
178. jerky
179. just got off tilt a whirl
180. Kinda feel circular
181. lightheaded in back of my head
182. lightheaded: could pass out
183. lightheaded: off balance
184. like a beach ball/volleyball
185. like a bobble head
186. like a hat on my head
187. like a liquid moving
188. like a mush ball in there
189. like a pancake on my head
190. Like a sapling in the wind
191. like a string puppet and somebody cut the strings.
192. like a television rolling
193. like a tight rubber band that ‘boing’ knocked me over
194. like a tornado
195. like a turd
196. like a waaah
197. like a wave/like a wave came in
198. Like a wooooo in my head
199. like a yo-yo
200. like a zing
201. Like an airhead
202. like behind a mirror looking into the room
203. like brain twisted
204. Like drawn away
205. Like earth is falling off axis
206. Like falling off a mountain
207. Like fighting gravity
208. Like fireworks coming down
209. Like head is in a bubble
210. Like horizontal
211. like I have a lot of water in my head.
212. like I just got off a swing
213. like I was a liquid
214. like I was being bounced on a trampoline next to a porcupine
215. like I was shoved/pushed
216. like I’m falling
217. like I’m going to keel over
218. Like I’m looking under water
219. like in a canister with lots of colors
220. like in a car that wants to go forward, but wind is pushing it back
221. Like in a different world
222. like in a hurricane
223. like in a metal drum- spun and thrown off a cliff
224. Like in a pinball machine
225. Like just got off a ride
226. like looking at objects far away through a magnifying glass
227. like my eyes want to cross
228. like my head is separating
229. like my soul was taken out of my body
230. Like my whole body is going to sleep
231. like on a bullet
232. like on a tilt of whirl
233. like on a waterbed
234. like on air
235. Like on cough syrup
236. like on tail of a computer mouse
237. Like scrambler ride in slow motion
238. Like someone pushed in the clutch and the gears aren’t working
239. like someone sitting on my head
240. like someone was pulling the hair off my head
241. like something is crawling around up there
242. like something is loose in my head
243. like sound waves on a cartoon
244. like stop frame photography
245. Like the moving of the second hand of a watch (tick tick tick tick)
246. like tipped hour glass over and sand coming out
247. Like toys play with that roll crazy
248. like under water
249. like up 30 stories and could fall, but no loss of balance
250. like walking around in a daze
251. like walking on a rowboat
252. Like watching clouds in the sky that are moving
253. little mice in head
254. looking around a pinwheel
255. loopy
256. Lose where I am
257. Magnet pulling me to right
258. motion sick
259. movement in back of my head
260. muttled
261. nausea
262. No control over anything
263. not 100% focused
264. not being myself
265. not clear headed
266. not here
267. not in self
268. not normal
269. Not present
270. not right
271. Not solid on the ground
272. not spinning, but not stationary
273. not straight
274. not sure
275. not with it
276. nothing is there
277. Nothing would register
278. numb head
279. odd feelings
280. odd sensation in head
281. off
282. off balance
283. off center
284. off kilter
285. off my game
286. off the ground
287. on a boat
288. on a dock
289. on a string dangling
290. on a tilt a whirl and unable to get off
291. one side is lower than the other
292. One side of brain is bouncing around
293. oozie
294. out of it
295. out of sorts with the world
296. out of the zone
297. outside looking in
298. perception looking at things way off
299. pressure in ear
300. pressure in eyes/behind eyes
301. pressure in head
302. pulling to the right/left
303. quick flick
304. rest of the world turns after me
305. revolving
306. Riding a wave
307. Rolling around
308. rolling down a hill
309. room circles around
310. room goes a different direction
311. Room going 100 mph around me
312. room is flashing around
313. room is going up and down
314. room is rolling
315. room is shifting/moving
316. room moving in and out
317. Room zig zagged
318. scrambled
319. scrolling
320. sensation of movement
321. Separated from myself
322. shaking back and forth
323. shhhh (small as it comes from my neck into my head it increases)
324. shifty/shifting
325. shut down in here
326. slightest movement is magnified 40 times
327. sloshing; glass of water swishing around
328. Slow scramble ride at fair
329. Slushing in the back of head like water and jello
330. somebody has your legs twirling you around
331. Someone cuts off top of head and everything floats out
332. someone grabbed my head and went ‘bam’ and shook it
333. Someone opens head up and sucks everything out of your head
334. someone pushed me down/pushed down
335. someone/something cracked my head then I spin
336. Something black
337. something closed in on my head
338. Something going on up there
339. Something in head not supposed to be there
340. something running in my head
341. something snaps and then I catch myself - a jerk
342. Something sucked; sucking down-zip
343. spacy
344. spinning; self, room, world, inside, outside
345. Spongie in back of head
346. Spooky
347. squirrelly
348. staggery
349. strange
350. Stuck to the wall
351. stuffy
352. surge- body going forward then backward
353. Swimming in a bowl of jelly
354. swimming in my head/swimmy
355. swirling
356. swoon
357. Swooshie
358. Taffy pulling snaps then turns into snow then shivers on right side of body
359. teeter tottering
360. temptation to throw myself off the bed
361. tend to go to the right/left
362. That rush
363. that sensation
364. The biggest moon was everywhere
365. there’s nothing there
366. Things aren’t distinct, but everything is clear
367. things jogging back and forth
368. things spiral around
369. thunderstorm in my head
370. tight band around my head
371. tilt a whirl
372. tipsy
373. too much blood in my head
374. top heavy
375. topsy turvy
376. tumbling
377. tumbling-things tumble
378. turning over
379. twirly
380. uneasiness
381. uneven
382. unsteady
383. unsure
384. Vacuum in my head
385. vvvvvvvv
386. wacko
387. waddling
388. walking on a boat
389. walking on clouds
390. walking on egg shells
391. walking on ice
392. walking on marshmallows
393. Walking on wet sponges on a moving fun house floor
394. walls falling down/in on me
395. Water rushing to my head
396. Wave between skull and brain
397. Wave of bluh
398. wave passes over
399. wavering
400. waving/head waving
401. weave back and forth
402. weavy
403. weightless in water
404. weird things/just kinda weird/weirdness
405. wheezy
406. Whirling
407. whish
408. whoa moments
409. whoo: whoo hoo
410. window on top of bed on top of me and curtains are on top of me
411. wobbly
412. wompy
The following algorithm is designed to be a basic guide in the taking of a history from a “dizzy” patient. First the “dizzy” patient must have their chief complaint specified into: vertigo (true spinning), light headed (sense of feeling faint, or passing out), or imbalanced (unsteady or tipsy). A few of the most common diagnostic criteria are then provided to differentiate conditions. Finally the most common conditions are found at the end of each branch. This is not a substitution for a thorough history and exam.

Created by Colin O’Brien SPT University of Wisconsin with advisement from Jeff Walter PT, DPT, NCS
Vertigo

Positional Complaints

- Spontaneous
  - <1 min duration/episode
    - Vestibular paroxysmia
    - Migraine variant dizziness
    - BPPV (cupulolithiasis)
    - Phobic positional vertigo
  - >1 min duration/episode
    - Vestibular paroxysmia
    - Migraine variant dizziness
    - BPPV (cupulolithiasis)
    - Phobic positional vertigo

- Persistent
  - >1 week
    - Non-otologic in nature

Hearing Loss

- Recurrent
  - Meniere’s disease
- Single Episode
  - Labryinthitis
  - Vestibular neuronitis
  - Anterior vestibular artery stroke

Time

- Induced by Sound and/or Pressure
  - Minutes/Seconds
    - Preceding history of migraine headaches and associated light, sound, odor sensitivity with vertigo
    - Superior canal dehiscence
    - Perilymphatic fistula
  - Superior canal dehiscence
  - Perilymphatic fistula

- Persistent
  - >1 week
    - Non-otologic in nature

Created by Colin O’Brien SPT University of Wisconsin with advisement from Jeff Walter PT, DPT, NCS
## Vestibular Disorders Comparison

<table>
<thead>
<tr>
<th>Disease</th>
<th>Diagnostic Tests</th>
<th>Pathophysiology and Cause</th>
<th>Signs and Symptoms</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BPPV</strong></td>
<td>Hallpike Dix (gold standard) for AC/PC, Sidelying test for AC/PC, Roll test for HC</td>
<td>Otoconia from utricle fall into SCC (typically posterior canal)</td>
<td>Brief episodes of vertigo (30 sec – 2 min) with rapid head mvt</td>
<td>Repositioning techniques</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Torsional and vertical for AC/PC</td>
<td>• Canalisthiasis:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Slightly torsional and horizontal for HC</td>
<td>▪ AC/PC: Epley, Semont/Liberatory (onto unaffected side), Gans Maneuer, Somersault</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Posterior canal: upbeating</td>
<td>▪ HC (lat): Appiani (onto unaffected side), BBQ roll,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Anterior canal: down beating</td>
<td>• Cupulolithiasis:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Horizontal (lateral) canal:</td>
<td>▪ AC/PC: Semont/Liberatory, Brandt Daroff</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Trauma</td>
<td>• Geotrophic: towards ground</td>
<td>▪ HC (lat): Časani (onto affected side)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Middle ear infection that affected the inner ear (viral or bacterial)</td>
<td>• Ageotrophic: away from ground</td>
<td>▪ Forced prolong positioning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Aging and degradation of vestibular system</td>
<td>• Canalisthiasis (otoconia in SCC)</td>
<td>• Canal plugging surgery</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Idiopathic</td>
<td>• Latency period 0-20 sec</td>
<td>• Meds will not help to tx the cause; but may help with nausea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ménière’s Disease</td>
<td>• Fatigues w/ repetition</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• CVA</td>
<td>• AC/PC: sxns &lt;60 sec</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• HC: geotrophic nystagmus; side affected will have higher duration and velocity of nystagmus and MOST sxns</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Cupuloisthiasis (otoconia stuck to cupula)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• No latency</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vestibular hypofunction</td>
<td>Vestibular apparatus itself (canals, otoliths, cochlea) is inflamed</td>
<td>Vestibular crisis: sudden onset vertigo with improvement 1-4 days (vertigo duration of 3-4 hours)</td>
<td>Acute phase: meds for nausea and dizziness control (Benadryl, Meclizine, Ativan, Valium, steroids)</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------</td>
<td>----------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Neuritis</td>
<td>Vestibular hypofunction</td>
<td>Inflammation of vestibular nerve</td>
<td>Same as Labyrinthitis but NO HEARING LOSS</td>
<td>Same as Labyrinthitis</td>
</tr>
<tr>
<td>Acoustic Neuroma (Vestibular Schwannoma or Acoustic Neurinoma)</td>
<td>Vestibular hypofunction</td>
<td>Benign tumor on vestibular nerve caused by overproduction of Schwann cells</td>
<td>May or may not have vertigo</td>
<td>Surgical removal, radiation, monitoring</td>
</tr>
<tr>
<td></td>
<td>CT scan w/ contract dye</td>
<td></td>
<td>May present like UVH or UVL</td>
<td>Vestibular rehab to promote CNS compensation</td>
</tr>
<tr>
<td></td>
<td>MRI</td>
<td></td>
<td>“Chronic dizziness” (no vestibular crisis)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Audiogram</td>
<td></td>
<td>Slow progressive hearing loss</td>
<td></td>
</tr>
</tbody>
</table>

- **Labyrinthitis**
  - Does not fatigue
  - AC/PC: sxns >60 sec
  - HC: ageotrophic; side affected will have lower velocity and duration on nystagmus and LEAST sxns

- **Neuritis**
  - Same causes as Labyrinthitis
  - Inflammation of vestibular nerve

- **Acoustic Neuroma (Vestibular Schwannoma or Acoustic Neurinoma)**
  - Benign tumor on vestibular nerve caused by overproduction of Schwann cells

- **Audiogram**
  - Labyrinthitis
  - Vestibular hypofunction
  - Middle ear infection that affected the inner ear (viral or bacterial)
  - Some medications
  - Meningitis
  - Head injury (causes inflammation)

- **Vestibular apparatus itself (canals, otoliths, cochlea) is inflamed**
  - Does not fatigue
  - AC/PC: sxns >60 sec
  - HC: ageotrophic; side affected will have lower velocity and duration on nystagmus and LEAST sxns

- **Vestibular crisis: sudden onset vertigo with improvement 1-4 days (vertigo duration of 3-4 hours)**
  - True vertigo on initial onset
  - Head mvt provokes sxns
  - May have auditory loss
  - Spontaneous horizontal torsional nystagmus toward unaffected ear
  - Impaired balance

- **Acute phase: meds for nausea and dizziness control (Benadryl, Meclizine, Ativan, Valium, steroids)**
  - Chronic phase: vestibular exercises and retraining

- **Neuritis**
  - Same as Labyrinthitis but NO HEARING LOSS

- **Acoustic Neuroma (Vestibular Schwannoma or Acoustic Neurinoma)**
  - May or may not have vertigo
  - May present like UVH or UVL
  - “Chronic dizziness” (no vestibular crisis)
  - Slow progressive hearing loss

- **Surgical removal, radiation, monitoring**
  - Vestibular rehab to promote CNS compensation
<table>
<thead>
<tr>
<th>Hyperventilation test (goggles)</th>
<th>Ménière’s Disease</th>
<th>Initial sxns: aural fullness, hearing loss, tinnitus fluctuating</th>
<th>Reduce salt in diet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Problem with absorption of endolymph into the endolymphatic sac of unknown etiology (excessive endolymph is the result → hydrops)</td>
<td>Progression to rotational vertigo, *postural imbalance (drop attacks), nausea, vomiting, nystagmus</td>
<td>Diuretics</td>
</tr>
<tr>
<td></td>
<td>● Circulation problems</td>
<td>● Attacks lasts 30 min to 24 hours (aura may precede attack)</td>
<td>☑ these both decrease inner ear fluid pressure</td>
</tr>
<tr>
<td></td>
<td>● Viral infection</td>
<td>● Tends to be bilateral</td>
<td>Vestibular rehab for balance</td>
</tr>
<tr>
<td></td>
<td>● Allergies</td>
<td></td>
<td>**VBRT may not be appropriate for unstable Ménière’s</td>
</tr>
<tr>
<td></td>
<td>● Autoimmune reaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Migraine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● Genetics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>● *High salt intake</td>
<td></td>
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</tr>
</tbody>
</table>

**Perilymph Fistula**

| Caloric testing may be normal or UVL affected ear | Tear in the round or oval window, causing perilymph to leak into inner ear | Often report a pop Initial sxns: episodic vertigo and sensorineural hearing loss, tinnitus Progression: imbalance, positional vertigo, nystagmus Tullio phenomenon: auditory induced vestibular sxns Sxns subside at rest – may return with coughing, sneezing, straining, nose blowing | Absolute bed rest initial 5-10 days, HOB elevated, avoidance of aggravating factors Surgery may be indicated *VBRT may not be appropriate |
| + Tragus test | | | |

**Superior Canal Dehiscence**

<p>| High resolution CT scan in temporal bone is needed (won’t show on normal CT) | Disruption of temporal bone overlying superior SCC (“3rd window”) | Tullio phenomenon Sensitive to pressure changes and loud sounds May see torsional nystagmus | *VBRT may not be appropriate for unrepaired SCD |</p>
<table>
<thead>
<tr>
<th>Motion Sickness</th>
<th>History Smooth pursuit Look at checker/mixed visual background. Watch treadmill belt</th>
<th>Conflict of visual and vestibular systems *If you had this for 2-3 days: termed LAND SICKNESS</th>
<th>● Nausea/vomiting ● Lightheadedness ● Yawning ● Pallor ● Cold sweats ● 1 hour to 1 day for recovery ● Pt feels WORSE w/ mvt</th>
<th>Habitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mal de Débarquement Syndrome</td>
<td>Unknown pathophysiology After prolonged flying, train, boat, space flight</td>
<td>Vertigo with neck pain Whiplash/head injury</td>
<td>● Sxns for days to months ● Perception of rocking as if on a boat that persists after debarking from prolonged passive transportation ● Abnormal sensation when NOT moving ● Pt feels BETTER w/ mvt</td>
<td></td>
</tr>
<tr>
<td>Cervicogenic Dizziness</td>
<td>Imaging HINTS test (bedside) ● Horizontal head impulse test</td>
<td>Vertigo that’s worse during head mvt or after maintaining one head position for a long time ● Dizziness occurs after neck pain ● May have HA with dizziness ● Lasts minutes to hours ● Imbalance</td>
<td>● Slow onset imbalance ● Vague sxns ● Slow vertigo lasting 24/7 ● Asymmetric muscle weakness</td>
<td>Refer to physician</td>
</tr>
<tr>
<td>CVA</td>
<td>Fluids + Tragus test ● Congenital: bilateral ● Head trauma: unilateral</td>
<td>Conductive hearing loss ● Imbalance</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Created by Marissa Nocera, DPT with advisement by Andy Beltz, PT
<table>
<thead>
<tr>
<th></th>
<th>(hHIT) is normal</th>
<th>INFARCT: Impulse</th>
<th><strong>Sudden onset with lightheadedness and imbalance with one of the D’s:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● Nystagmus that changes direction on eccentric gaze</td>
<td>Normal, Fast phase Alternating, Refixation Cover Test → CVA</td>
<td>● Diplopia</td>
</tr>
<tr>
<td></td>
<td>● Skew deviation (cross cover test) +</td>
<td></td>
<td>● Dysphagia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Dysmetria</td>
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<td></td>
<td></td>
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<td>● Dysarthria</td>
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<td></td>
<td></td>
<td></td>
<td>● Drop attacks</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>● Dizziness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>● Numbness</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>● Nausea</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>● Nystagmus</td>
</tr>
</tbody>
</table>

**Concussion**

- SCAT test
- IMPACT test
- BESS test is good for the athletic population

- Mild traumatic brain injury (direct blow to the head)
- Energy crisis d/t excitotoxic glutamate production
- Dizziness
- Nausea/vomiting
- Lightheadedness
- Neck pain
- GCS 13-15
- May report LOC
- Amnesia
- Irritability
- Slowed reaction time
- Cognitive changes
- Emotional lability
- Many have convergence problems
- Cognitive and physical rest is vital for recovery
- Graduated return to activity (no activity light aerobic sport specific noncontact training drills full contact practice return to play)
- Tx balance and vestibular problems
- For convergence retraining, use the Brock String and pen push ups

**Vestibular Migraine**

- Determined a “migrainer” from the International Headache Society
- Suspected to involve the labyrinth and vestibular nuclei with other areas of the brainstem and midbrain

- Spells lasting minutes
- Vertigo, motion sickness, dizziness
- May be spontaneous (aura)
- Check medications – they may be causing the migraine
- VBRT
<table>
<thead>
<tr>
<th>(IHS)</th>
<th>or motion provoked</th>
<th>Genetic component; 15% of the population</th>
<th>All senses are heightened: taste, smell, hearing</th>
<th>*Do not do too much too fast/soon with these patients, as you may overstimulate them</th>
</tr>
</thead>
</table>
| **Hypersensitive Patient**  
**Highly sensitive person** | Smooth pursuit vibration test  
Startle with head impulse test | ● May have neck pain | ● May startle easy  
● Watching other people/things move may provoke sxns (ex: when watching a movie)  
● May have migraine component | ● Tai Chi  
● VBRT |
| **Visual Vertigo** | Smooth pursuit  
Convergence  
Dizzy when still watching things move. | Sensory re-weighing problem  
Rely too much on eyes for balance/spatial awareness | ● habituation | ● |
| **Sense normal sway as abnormal** | Romberg- eyes closed  
Video client and show how much they actually move | Sensory re-weighing problem  
Highly sensitive nervous system  
They are trying to take conscious control over an unconscious event. | ● Biofeedback  
● Relaxation training | ● |
Left Beat Mismatch

Hydrocephalus

Left

0.1

Right Ventricular

100 Spikes/sec

100 Spikes/sec

Scared Gaze

Left

The "Eye Guy!"
+ Acute Meninges

Hypermethioninemia

+ Beta Prop

Commune Causes

Hyperactivity

Left Vestibular

Left

150

100

Right

The Ear Guy

100

100
Alexander's Law

- Completely headling
- Complete comprehension or
- 71 - 99%
- 15%
- 34 - 70%
- 0 - 33%
- Estimated ear function

Spontaneous and Gaze Hold, Unstaggering Tests
- Left Ear
- Center Ear
- Right Ear

Degree of Ataxia
Vicious Cycle

Dizziness Trigger

Sensory Re-Weighing

Anxiety/fear of dizziness

More Dependent on Vision/Neck Stiffens

Hands used for balance

Sense normal sway as abnormal

Height Vertigo

Balance Muscles Freeze

Fall/Fear of Falls

Avoidance Behavior

Disuse Dysequilibrium
Explanation of Vicious Cycle of Dizziness (Quick Reference)
What the therapist should do for their clients in each stage.

Dizziness Trigger:
The most common dizziness trigger is called Benign Paroxysmal Positional Vertigo. Other triggers for the vicious cycle of dizziness may be different inner ear problems, migraines, neck problems, a fall, fear of falls, imbalance from weakness or stiffness, aging, heart and neurologic problems. These triggers may cause intense feelings of dizziness that can last seconds to days. Dizziness triggers initiate the vicious cycle of dizziness because they confuse the brain. Therefore the brain has to get more information about where it is in space from other sources (conscious control, eyes, sensors in our joints and balance muscles).

Dizziness triggers may cause terror in the individual facing the problem for the first time. This may lead to unpleasant memories that are associated with movements or activities. As a result, the nervous system (sympathetic and parasympathetic) may be out of balance.

What the therapist should do: Know what the trigger is.

**BPPV**
If the trigger is BPPV, then fix it with the most appropriate canalith repositioning maneuver. Once BPPV is fixed, check to make sure it hasn’t returned with the most appropriate testing tool such as: dix-hallpike test, roll test, have them lie down, roll over, etc. Did they spin? Did you see nystagmus? If you did not see nystagmus and they insist they spin, ask them if they really are spinning or they feel they could spin. If they describe a pre-spin sensation, the otoconia are most likely back in place. Yet, there could be a few still out of place.

Educate them that BPPV is often recurring and how to know when it has returned. Expect complete recovery if nothing else is going on. BPPV can be the most terrifying experience for some. Look for nervous system hypersensitivity and associated symptoms. Recognize when clients are battling through the vicious cycle of dizziness and educate with the information provided below accordingly. Keep in mind not all positional dizziness is from BPPV. Consider other peripheral/central problems that may mimic BPPV.

**Inner ear infection (Labyrinthitis or Neuritis)**
There is nothing you can do to prevent this from occurring. By the time clients with this problem have come to you, the intense portion (“the pit”) should be over (assuming you are an outpatient therapist). You may be needed to promote vestibular compensation and to help them get through the cycle with X1 and X2 viewing exercises (adaptation exercises). Educate them on vestibular compensation, uncompensated hypofunction and decompensation. Teach them how to stay compensated once their dizziness has improved. Consider treating their neck in conjunction with vestibular rehab to rid any pain they may have and restore normal motion. Sometimes the neck should be treated prior to initiating vestibular exercises. Expect at least 90% recovery if nothing else is going on and it is a unilateral lesion. Use vestibular adaptation, substitution and habituation techniques. The primary goal is to improve the gain of the vestibulo-ocular reflex. (Head movement/eye movement = -1) Use “The Pit” graph to enhance understanding.

**Migraines**
Teach ways to prevent migraines. See if neck therapy and exercise in general will prevent spells. Help them through the cycle once their migraine goes away. Every migraine could cause the cycle to begin again.

**Sensory re-weighing: (explanation to client)**
This commonly occurs when the brain is not able to rely on the inner ear for balance. So, the brain looks for help elsewhere. It asks for more information regarding where you are in space from your eyes and sensors in
your neck and balance muscles. This may lead to motion sensitivity, motion sickness and other types of dizziness.

*Therapist advice:*
Try to promote equal sensory input by stimulating the brain to use the systems it is not using. For instance, if they rely too much on their eyes, then do activities with their eyes closed. Promote normal movement and function through vestibular rehab, neck therapy, aerobic training, balance training and community reintegration. Use motivational education. Use a variety of surfaces, speeds and directions of motion. Challenge them beyond what they think they can do. Progress their HEP once they are no longer challenged.

**More dependent on vision:** *(explanation to client)*
When we rely too much on our eyes for our balance, we will get “dizzy” watching objects move or in environments such as supermarkets or other large open rooms with inconsistent visual stimulation. This is because we “feel” what our eyes see. If we are watching something move our brain thinks we are moving. This causes “Visual Vertigo.” Our brain can’t trust our ears, so it relies more on our eyes. This is very common as we get older. Imbalance in a dark room is often because we rely too much on our eyes for balance. This often leads to motion sickness and other types of dizziness.

*Therapist advice:*
Do gaze stabilization (X1 viewing and X2 viewing) exercises and eyes closed balance training. Consider youtube video progressive exercises. Teach central pre-programming (walk toward targets with the eyes closed/look at imaginary targets with the eyes closed, eye then head exercises.) Work on neck strengthening and proprioception. Frequently consider a retraction and extension approach. Work on posture. Assure neck pain is gone and that the anterior deep neck flexors are strong. Rid headaches/neck pain with manual therapy, therapeutic exercise and postural training. Avoid causing any increase in dizziness that requires longer than one minute to return to baseline. Progress their HEP prn.

**Neck Stiffens:** *(explanation to client)*
Because the brain can’t trust the ears, the neck is asked to help out more. It helps by tightening so we feel more stable. However, the tightening can make the brain think we are moving when we aren’t. This usually causes motion sickness, funny feelings in the head, neck pain and headaches.

*Therapist advice:*
The vestibulocollic reflex can actually become hyperactive (involuntarily). It attaches from the saccule in the inner ear to the sternocleidomastoid. Work on neck stretching, strengthening and proprioception. Frequently consider a retraction and extension approach. Work on posture. Promote pain free and normalized neck ROM and assure the anterior deep neck flexors are strong. Rid headaches/neck pain with manual therapy, therapeutic exercise and postural training. Avoid causing any increase in dizziness that requires longer than one minute to return to baseline. Progress their HEP once it gets too easy.

**Sense Normal Sway as Abnormal:** *(explanation to client)*
Now that all of our senses are heightened (eyes and sensors in joints/muscles), we pay extra attention to where we are in space and what we are feeling with balance. Feelings that used to be unconscious may become conscious. This usually causes us to perceive normal movement as abnormal. Therefore, we feel off balance most of the time we are on our feet. None of us ever stand perfectly still. We are always moving when we are on our feet. However, sometimes we believe normal movement is a problem because we lack trust in our balance system.

*Therapist advice:*
Our client needs motivational education about the following: we all move/we all sway. Consider comments like, “if you weren’t moving when you stood still, you would fall over. Relax and let the natural movement
take place.” Tell them when they feel movement to relax through the movement and to say to themselves “good, that means I have good balance and am getting better.” Encourage them to be aggressive when they walk. Explain that they are not off balance, wobbling or moving—they just feel like they are. Politely encourage them to stop paying so much attention to the way they feel when they are on their feet. Over challenge them. Use biofeedback through video of their performance. Consider Tai Chi and progressive neuromuscular relaxation techniques (toes, feet, ankles, knees, etc). These techniques help remove the perception of a threat which decreases sympathetic nervous system hyperactivity.

**Balance Muscles Freeze: (explanation to client)**
When normal sway is perceived as abnormal, we voluntarily try to stiffen so we don’t move. This response causes our balance muscles to “freeze.” “Frozen” muscles do not allow our normal balance reflexes to work. Then, we become much more off balance because we weren’t made to work that way. We have much better balance when relaxed and the natural reflexes can work. People with anxiety and fear of falls will tend to have this problem the most.

**Therapist Advice:**
Encourage them to be aggressive when they move from one place to the next (as long as they are safe with this approach). Teach them to walk and move with purpose. Yet, encourage them to relax different muscle groups so that their natural balance reflexes are able to work. Try to get them to do a balance activity that will easily reveal their tendency to be stiff/rigid. If your facility allows, capture their performance with video or demonstrate their movements. One example is to consider having them do the stairs without hands. Most clients’ sense of unsteadiness will increase with this activity. Then, encourage them to be aggressive and use task practice. Usually, this approach improves performance within two to three repetitions. Another example is having them do heel then toe raises. Most clients will remain stiff in the spine/hips. Their entire body will move forward and backward and they will have to step to keep from falling. Teach them to bend at the waist (lumbar flexion and extension in combination with heel and toe raises). You could also try resisted walking with theraband on even surfaces and stairs in all directions. This teaches them how to be aggressive when they walk/to walk with purpose. Try to get their central limits of stability in line with their true physical limits of stability. **If they are not off balance during their therapy then they are not receiving balance therapy. Skill is needed to help your client push their limits without letting them injure themselves.**

**Avoidance Behavior: (explanation to client)**
When you avoid moving so you do not get dizzy, you may never know when the original cause of your dizziness is gone. In addition, your balance muscles never have the chance to be stretched and strengthened so they remain weak. Your brain also forgets how to sense motion as normal and never has the chance to adjust the information from your eyes, ears and muscles and joints. This prolongs getting back to normal.

**Therapist Advice:**
Ask them what they used to do for enjoyment. You will discover they used to participate in activities such as: dance, golf, tennis, walk for exercise, etc. Try to get them doing these things in some manner. Break the task down for them in steps if needed. Encourage their caregiver to stop doing things for them. Encourage them to start turning there heads and moving at more normal speeds. Explain that it is “good to be dizzy” as long as it goes away in one minute and they are safe. Ask them which movements or activities they have been avoiding. Every session you see them, ask if they have started doing those things. Teach them to improve both their mental limits of stability and physical limits of stability. **Explain which subtle senses of dizziness are not a sign they will experience another attack.**

**Disuse Dysequilibrium: (explanation to client)**
Now that we are more stiff and dizzy when we move, we move less. We learn avoidance behavior. If we don’t move certain ways then we won’t get dizzy. This leads to balance muscle weakness. The balance muscles
aren’t used so they get weak. If we don’t use it we lose it. The hands are used in place of the legs on places like furniture and walkers. As a result, our hands become better at walking than our legs.

*Therapist Advice:*
Work on balance, gait, LE strength training and aerobic training. Teach them that if they don’t use it, they will lose it. Get them to do the things they have been avoiding at home. Emphasize task practice. Increase their functional activities (reps of getting off the couch and walking to the kitchen, sit to stands, etc). Encourage them to rely less on their hands and more on their legs for balance. Try to get them to do the things they used to do at a more normal intensity, speed and duration. Take the walker away when able. They have to be off balance with you in order for their balance to improve. **If they are not off balance during their therapy then they are not receiving balance therapy.** The skill involved is pushing them to their limits without letting them injure themselves.

**Falls/Fear of Falls:** *(explanation to client)*
Since our balance muscles have become weak, stiff and we aren’t perceiving motion the way we should, we often develop a fear of falls. Even worse, we actually fall. This causes us to be more cautious when we walk.

*Therapist advice:*
Teach them about mental limits of stability (how bad they think they are) and physical limits of stability (how bad they actually are). Explain that mental limits of stability need to equal physical limits of stability. These clients will characteristically say “I can’t” with most activities. Have them do the things they say they can’t do. Point out that they said they couldn’t, but yet they did and that they did a good job. Provide a large amount of motivational education and try to improve their confidence on their feet through very challenging activities. Provide motivational education that they are not going to fall or lose their balance. Use objective balance tests (Berg, timed walk and sit to stands, Functional Gait Assessment, or make up your own) to encourage them. Every visit, if possible, remind them of how they used to do a task and how much they have improved since then. Use objective measures to reinforce their confidence. Explain studies have been done to prove they will not fall if they get certain scores. Consider what variable they think will help them the most (having strong legs, better balance, less pain) and try to address those issues. Balance, gait, LE there-Ex. **If they are not off balance during their therapy then they are not receiving balance therapy.** The skill involved is pushing them to their limits without letting them injure themselves.

**Height Vertigo:** *(explanation to client)*
Because of a fall or fear of falls, we develop a fear of heights standing on our own two feet. This causes feelings of lightheadedness, unsteadiness, imbalance and other funny feelings in the head. Now, the feeling many people have standing at the top of a tower, the individual will have standing on the ground.

*Therapist advice:*
This is similar to falls/fear of falls. Educate them on what height vertigo is. Try to reproduce this sensation at smaller intensities in a safe and controlled environment. These clients will appear as though they are walking on ice. They perceive a major threat which causes symptoms related to an increased fight or flight response.

**Hands Used for Balance:**
We were meant to walk with our feet, not our hands. So when we use our hands all the time, the balance muscles in the legs become weaker and the brain forgets how to walk without the hands.

*Therapist advice:*
Get them to stop using their hands for their balance in the clinic and at home. They may continue to use the walker as needed, but try to get them to rely less upon it.

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<table>
<thead>
<tr>
<th>Type of VR</th>
<th>Treatment used for:</th>
<th>Watch/Listen For:</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repositioning&lt;br&gt;Return otoconia</td>
<td>BPPV: Phase I and II Build patient confidence after remission.</td>
<td>Nystagmus Spinning or other forms of dizziness Nausea/VasoVagal Otolith crisis (rare) Fight or Flight</td>
<td>Epley, Semont, Bar-B-Q roll, Gufoni, Appiani and many others.</td>
</tr>
<tr>
<td>Adaptation&lt;br&gt;Improve gain of VOR</td>
<td>Vestibular Hypofunction (Unilateral Weakness)</td>
<td>Retinal slip blurred vision Neck/postural stiffness</td>
<td>X1 and X2 viewing on multiple surfaces with head in variety of positions. Must be quick with few degrees of ROM. Cues to relax neck.</td>
</tr>
<tr>
<td>Habitation&lt;br&gt;Organized and controlled repeated exposure to get brain to ignore problem.</td>
<td>Peripheral vestibular, central Vestibular (be extra cautious LESS IS MORE!), cervicogenic, unknown reproducible forms of dizziness.</td>
<td>Rules: make sure severe symptoms abate in 1 min or less when still. General dizziness (mild) to abate in 30 minutes or less when still.</td>
<td>Be creative with function: Pick 1-3 movements that create very mild dizziness and have them do 2-5 times 1-4 times a day pending patient tolerance. Use motion sensitivity test for guide. Decrease fight or flight response by removing perception of threat. “It’s good to be dizzy as long as rules are followed.”</td>
</tr>
<tr>
<td>Substitution&lt;br&gt;Enhance working balance and visual system integration performance as much as possible.</td>
<td>Peripheral, central, cervicogenic, unknown cause of dizziness or imbalance.</td>
<td>Must be symptomatic (off balance if working on balance)</td>
<td>Closed eye with/without head turns, on multiple surfaces, mixed speeds; think function. Use berg, Functional Gait Assessment, timed walks, “Suicides,” Giant Cone Walking. Use objective tools that provide biofeedback.</td>
</tr>
<tr>
<td>Neck Therapy*&lt;br&gt;Normalize neck health (ROM, strength, nerve sensitivity)&lt;br&gt;Decrease fight or flight</td>
<td>Cervicogenic, peripheral, central, unknown causes of dizziness (As long as no cervical contraindications exist), those in fight or flight, highly sensitive person.</td>
<td>Neck pain and dizziness relieved with ther-ex, manual therapy</td>
<td>Suboccipital release, C1/C2 mobs, manual distraction, soft tissue mobs/manual therapy, contract relax, normalize ROM/Strength with there-ex: don’t forget deep neck flexors: Focus C1/C2.</td>
</tr>
<tr>
<td>Motivational Education*&lt;br&gt;Decrease fight or flight response&lt;br&gt;Improve compliance</td>
<td>Cervicogenic, peripheral, central, unknown causes of dizziness, nervous system imbalance, increased fight or flight, highly sensitive person.</td>
<td>Do they understand which types of dizziness are not a sign they will have another attack?</td>
<td>Use anatomy, physiology and understanding of pathology to explain problems; use handouts; must get worse before gets better. Must use objective biofeedback to guide progression and prove progress. You will improve! Very few do not get better!</td>
</tr>
<tr>
<td>Nervous system health promotion*&lt;br&gt;Decrease fight or flight response</td>
<td>Cervicogenic, peripheral, central, unknown causes of dizziness, nervous system imbalance, increased fight or flight, highly sensitive person.</td>
<td>Highly sensitive characteristics (sensitive to light, sound, odor, movement) Take highly sensitive person test at: hsperson.com</td>
<td>Consider: VR, neck therapy, motivational education, Tai Chi for balance and relaxation. Encourage optimal emotional and spiritual health and training. Coaching that stimulates parasympathetic activity.</td>
</tr>
</tbody>
</table>

*These are technically not forms of vestibular rehabilitation, but are often helpful when helping clients battle dizziness.
Oculomotor and Vestibular Testing With/Without Fixation Blocked
Aultman Tusc Therapy Services
Testing Key: C= test for central vestibular system function
P= test for peripheral vestibular system function

Name/Number: ___________________________________ Dx: __________________

Symptoms/Findings consistent with: ______________________________________

Tests Performed in Room Light
1) Spontaneous Nystagmus and Skew Eye Deviation (C and P)

2) Gaze Hold Nystagmus (C and P) Right Left Up Down

3) Smooth Pursuit and Convergence(C) Pupil size/reaction/Eyelid symmetry

4) Saccadic Eye (C)

5) Head Impulse Test (Vestibulo-Ocular Reflex) (C and P)

6) Cervical spine AROM Right Left
    Rotation Sidebend With Vertebral Artery Test

7) Neck rotated with stable head (Head Neck Differentiation Test)

Tests Performed with Fixation Blocked (Infrared Video Eye Movement Recorder)
1) Spontaneous Nystagmus (C and P) “Choung’s Test” flexed 30 degrees flexed 60 degrees neck extended

2) Gaze Hold Nystagmus (C and P) Right Left Up Down

3) Head Shaking Nystagmus (C and P)

4) Mastoid Vibration Test (P)

Positional/Positioning Testing Fixation Blocked (Infrared Video Eye Movement Recorder)
1) Dix-Hallpike (C and P) Right Left

2) Nylan Barany Test (C and P) Right Left

3) Sit to Supine (head flexed 20 degrees) (C and P)

4) Roll Test (C and P) With neck rotation Right Left
   Whole body/neutral spine Right Left

Tests Performed by: _____________________________________________
Epley Maneuver for BPPV (Right side)

- Start by sitting on a bed with your head turned 45 degrees to the Right. Place a pillow behind you so that on lying back it will be under your shoulders.
- Lie back quickly with shoulders on the pillow, neck extended, and head resting on the bed. In this position, the affected Right ear is underneath. Wait for 30 seconds after the dizziness goes away.
- Turn your head 90 degrees to the Left (without raising it), and wait again for 30 seconds after dizziness goes away.
- Turn your body and head another 90 degrees to the Left, and wait for another 30 seconds after dizziness goes away (you can also roll to your belly in this position).
- Sit up on the right side keeping your head down and turned to the left.

This maneuver should be performed _______ time(s) a day. Repeat this daily until you are free from positional vertigo for 24 hours.
Treatment of BPPV on the __Left__ Side

1. Start by sitting on a bed with your head turned 45° to the Left. Place a pillow behind you so that on lying back it will be under your shoulders.
2. Lie back quickly with shoulders on the pillow, neck extended, and head resting on the bed. In this position, the affected left ear is underneath. Wait for 30 seconds after the dizziness goes away.
3. Turn your head 90° to the Right (without raising it), and wait again for 30 seconds after the dizziness goes away.
4. Turn your body and head another 90° to the right, and wait for another 30 seconds after the dizziness goes away (you can also roll to your belly in this position.
5. Sit up on the left side keeping your head down and turned to the right.

This maneuver should be performed ______ time(s) a day. Repeat this daily until you are free from positional vertigo for 24 hours.

Contact us if you have questions prior to doing this maneuver if you have not seen us in a while.

Andy Beltz, PT or Chad Gooding, MSPT
Aultman Tusc Therapy
330-363-6215
For Lateral Canal BPPV (Determining Cupulolithiasis Vs. Canalolithiasis)

<table>
<thead>
<tr>
<th>Test</th>
<th>Left Lateral Canal</th>
<th>Right Lateral Canal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seated Spontaneous Nystagmus Test</td>
<td>Ageotropic</td>
<td>Geotropic</td>
</tr>
<tr>
<td></td>
<td>Left Beat</td>
<td>Right Beat</td>
</tr>
<tr>
<td>Head Flexed 20-30 Degrees= null point</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>60 Degrees (Choung’s Test)</td>
<td>Right Beat</td>
<td>Left Beat</td>
</tr>
<tr>
<td>Extended (Choung’s Test)</td>
<td>Left Beat more intense</td>
<td>Right Beat more intense</td>
</tr>
<tr>
<td>Sit to Supine Head Flexed</td>
<td>Left Beat</td>
<td>Right Beat</td>
</tr>
<tr>
<td>Roll Left</td>
<td>Less intense</td>
<td>More intense</td>
</tr>
<tr>
<td>Roll Right</td>
<td>More intense</td>
<td>Less intense</td>
</tr>
</tbody>
</table>

**Maneuvers for Lateral Canal Cupulolithiasis**

**Conversion from Apogeotropic to Geotropic**

- **Head Shaking**
  - Supine 20 head oscillations in the horizontal plane with head tilted 30 degrees forward

- **Head Pitching**
  - Pitch head 60 degrees forward and 45 degrees backward 20 times

- **Rolling**
  - Rapid roll from affected to healthy ear 10-15 times

**Treatment for Apogeotropic Lateral Canal Cupulolithiasis**

- **Modified Gufoni** (debris on side of utricular vestibule)
  - Begin seated then quickly lie down on the affected side with the c-spine neutral. Rapidly rotate the c-spine 45 degrees toward the floor. Hold 2-3 minutes then return to sitting.

- **Appiani** (debris on side of long arm)
  - Begin seated then quickly lie down on the affected side with the c-spine neutral. Rapidly rotate the c-spine 45 degrees toward the ceiling. Hold 2-3 minutes then return to sitting.

- **Forced Prolonged Positioning**
  - Sleep on involved side with unaffected ear up.

- **Lempert 360 degree roll**
  - Toward unaffected ear (White recommends first)

- **Vannucchi-Aspella**
  - Rapidly move from sitting to supine then turn head rapidly to the unaffected side and return to sitting then return head to midline. 5-8 times in rapid succession. (White Recommends Second)

**Treatment for geotropic lateral canal canalolithiasis**

- **Gufoni**
  - Begin seated then quickly lie down on the unaffected side with the c-spine neutral. Rapidly rotate the c-spine 45 degrees toward the floor. Hold 2-3 minutes then return to sitting.

- **Lempert 360 or 270 degree roll**

- **Forced Prolonged Positioning**
  - Lie on back, roll toward uninvolved side and sleep on uninvolved side with the affected ear up.

Half Somersault Right ear

A
Look straight up at ceiling

B
Place head in somersault position

C
Turn head to face right elbow

D
Raise head quickly to back level

E
Raise head fully upright

Dark curved arrows show head movements
Lighter arrows near eyes show the direction you should be facing

Carol A. Foster M.D.
University of Colorado Hospital
720-848-2820
Patient instructions for Half somersault

Instructions for Half Somersault for right-sided BPPV

**A.** Kneel on the floor or in the middle of a large bed. Tip your head straight upward quickly until you are looking straight up at the ceiling. This may cause dizziness briefly.

**B.** Next place your head on the floor upside down, as if you are about to do a somersault. Tuck the chin so that your head touches the floor near the back of the head rather than near the forehead. This position may cause a burst of vertigo. Without moving, wait until any vertigo ends. The vertigo means the particles are moving in the proper direction. Tapping firmly on the skull with your fingertips just behind the right ear can help move the particles along.

**C.** Slowly turn your head to face your right elbow. Try to center the right elbow in your field of view. You will keep your head turned to the right through the rest of the maneuver. Again, wait for any vertigo to end before moving to the next step.

**D.** Keeping your head turned to the right and viewing your right elbow, QUICKLY raise your head to shoulder level. Your head should be positioned at about a 45° angle to the floor throughout this move. Vertigo is normal during this part of the procedure. Wait for the vertigo to end or count to 15 before continuing.

**E.** Raise your head to the upright position QUICKLY, keeping it about halfway turned toward the right shoulder. Some additional vertigo may occur. After the vertigo subsides, slowly sit upright.

Rest for 15 minutes. After the rest, quickly tip your head up and down. If no dizziness occurs, do not repeat the maneuver. If you still feel some dizziness when making that movement, repeat the maneuver. You may also repeat the maneuver if you have another vertigo spell in the future.

**Additional instructions:**

Always wait at least 15 minutes between maneuvers to allow particles to settle.

Sleep propped up on 2 or 3 pillows for two nights following the maneuver.

Sleep only on your left side for a week after the maneuver (put a pillow behind you to keep you from rolling over in the night).
Half Somersault: For Left Ear

A

Look straight up at ceiling

B

Place head in somersault position

C

Dark curved arrows show head movements

Lighter arrows near eyes show the direction you should be facing

D

Turn head to face left elbow

E

Raise head fully upright

Raise head quickly to back level

Carol A. Foster M.D.
University of Colorado Hospital
720-848-2820
Patient instructions for Half somersault

**Instructions for Half Somersault for left-sided BPPV**

**A.** Kneel on the floor or in the middle of a large bed. Tip your head straight upward quickly until you are looking straight up at the ceiling. This may cause dizziness briefly.

**B.** Next place your head on the floor upside down, as if you are about to do a somersault. Tuck the chin so that your head touches the floor near the back of the head rather than near the forehead. This position may cause a burst of vertigo. Without moving, wait until any vertigo ends. The vertigo means the particles are moving in the proper direction. Tapping firmly on the skull with your fingertips just behind the left ear can help move the particles along.

**C.** Slowly turn your head to face your left elbow. Try to center the left elbow in your field of view. You will keep your head turned to the left through the rest of the maneuver. Again, wait for any vertigo to end before moving to the next step.

**D.** Keeping your head turned to the left and viewing your left elbow, QUICKLY raise your head to shoulder level. Your head should be positioned at about a 45° angle to the floor throughout this move. Vertigo is normal during this part of the procedure. Wait for the vertigo to end or count to 15 before continuing.

**E.** Raise your head to the upright position QUICKLY, keeping it about halfway turned toward the left shoulder. Some additional vertigo may occur. After the vertigo subsides, slowly sit upright.

Rest for 15 minutes. After the rest, quickly tip your head up and down. If no dizziness occurs, do not repeat the maneuver. If you still feel some dizziness when making that movement, repeat the maneuver. You may also repeat the maneuver if you have another vertigo spell in the future.

**Additional instructions:**

Always wait at least 15 minutes between maneuvers to allow particles to settle.

Sleep propped up on 2 or 3 pillows for two nights following the maneuver.

Sleep only on your right side for a week after the maneuver (put a pillow behind you to keep you from rolling over in the night).
Comparison by trigger: Write Yes or No

<table>
<thead>
<tr>
<th>Dizziness when:</th>
<th>BPPV</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>up from bending over</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sitting up (at normal speed)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rolling over to at least one side (must roll to both sides)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>bending over</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tilting head back</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tilting head down</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lying down</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BPPV and OH comparison by timing: Write yes or no

<table>
<thead>
<tr>
<th>Duration</th>
<th>BPPV</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>seconds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>minutes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

BPPV and OH comparison objectively: Write yes/no, positive or negative

<table>
<thead>
<tr>
<th>Finding</th>
<th>BPPV</th>
<th>OH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nystagmus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BP drop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>off balance standing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dix Hallpike and sidelying tests</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roll Tests</td>
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</table>
Tips for Breaking the Vicious Cycle of Dizziness  
By: Andy Beltz, PT

The top nine reasons people remain in the cycle are:
1. Fatigue
2. Avoidance behavior
3. Hypersensitivity to normal movement
4. Belief that you will get dizzy if you move
5. Belief that you are much worse than you really are
6. Too much focus on your problem
7. Stress
8. Heat
9. Weakness
10. Sickness

Fatigue:
Your body needs energy to break the cycle of dizziness. Make sure you only use the muscles you have to use when moving. This will help your brain organize information relating to movement. Instead of tensing up during a spell, teach your body to relax through the spell. Do not fight your body’s natural ability to move during a spell.

Avoidance behavior:
First, you must understand the difference between “red light” and “green light” dizziness. If you have “green light” dizziness, then you must move through the spells. “Green light” dizziness is dizziness that is good to have. In other words, it is good to be dizzy.

Remember to relax through the movement that causes dizziness. Do not avoid moving for fear of becoming dizzy. This will prolong your recovery because you will get weak and forget how normal movement feels. For example, if you find yourself making comments like, “I better not do that or I will get dizzy,” or “I don’t move fast anymore,” or “I have to be careful when I move,” or “I don’t think I will ever be able to move like that again,” then these are signs of avoidance behavior.

Your balance system has to be used in order to work out it’s inability to sense information about movement in an organized manner.
Once you provoke the spells, duration of severe symptoms should be no longer than one minute if you hold still. A general “motion sick” sensation should last no more than 30 minutes if you hold still.

“Red light” dizziness means you should not cause the dizziness to occur on purpose because it will not be helpful. Discuss the difference between red and green light dizziness with your therapist if you have questions.

**Hypersensitivity to normal movement**

We all feel movement every time we are upright. The faster you move, the more motion you will feel in your head. If you hold still while standing on your own two feet and pay close attention, you will feel your body sway. It is normal to have these feelings. Prior to your spells these were unconscious feelings that were present. However, once a “dizziness trigger” occurs it causes us to over analyze our balance system. The unconscious becomes conscious. We pay so much attention to the details of movement that we think movement should not be present in our bodies. We sense that movement as danger! This causes an exaggerated “startle” response when we feel movement. This “startle” response actually throws us off balance because it triggers the “fight or flight” response in our bodies. You have to teach yourself to allow your body to move and retrain your body to shut off the “startle” or “fight or flight” response. Try concentrating on other things. Try to ignore your balance and dizziness. Remind yourself you have good balance and that you will not fall and teaching yourself, “it’s good to be dizzy.” Allow your natural reflexes to work. Don’t consciously take over what the unconscious should be doing. The more you move to work out this hypersensitivity, the quicker it will go away.

**Belief that you will get dizzy if you move**

Spells of dizziness are so terrible that they are not quickly forgotten. Therefore, you have to fight the belief that just because you became dizzy by moving certain ways in the past does not mean you will become dizzy by moving a certain way now. Most likely, the original cause of your dizziness is gone. Ask yourself if you are actually dizzy or if you just feel like you could become dizzy. If it is just that you feel you could become dizzy then this is green light dizziness.
Belief that you are much worse than you really are
Your perception of how bad your balance problem is may not be consistent with how bad your balance problem actually is. If you believe you are moving, but your therapist explains to you that you are not moving, this is evidence of a perceptual problem relating to your balance. In this case, either you lack confidence in your ability and/or your “speedometers” that sense motion in your balance system are telling you there is more movement taking place than what is really occurring. Use video recording, a mirror or an individual to help you learn what your true physical limits are. Once you learn your true limits, don’t forget what you learned!

Too much focus on your dizziness or balance problem
Balance and dizziness problems can sometimes seem like an air horn on a train in our every day lives. Therefore, you have to train yourself to pay less attention to the problem. Eventually, paying close attention to every sensation you feel relating to your balance/dizziness makes the problem worse. Balance is something that is supposed to take place at an unconscious level. By focusing on your balance, you are making it a conscious activity. If you haven’t fallen yet, or if your therapist tells you that you will not fall, then you probably will not fall in the future either (outside of tripping over an unseen object). Therefore, you do not need to focus on your dizziness/balance as a way to try to prevent something bad from happening. Thinking about whether or not it is there or how bad it feels is not helpful. The sooner you get your mind off the problem, the quicker it will go away. If you have an unexplainable type of dizziness, such as “fuzzy in the head,” “heavy head,” “blurred vision even though my vision is clear,” “pressure in the head,” “foggy head” then you are better off ignoring it if able. Try not to stop and think about whether or not you feel it. Pausing to concentrate so that you can determine whether or not you feel the dizziness is a form of focus that is not helpful.

Stress
Stress causes fatigue and distracts our bodies from functioning normally. It causes tension in the muscles of our balance system and prevents sleep. Stress slows the compensation process for healing through the vicious cycle of dizziness. Prolonged stress is not helpful when trying to rid dizziness. Physical, spiritual and emotional training is necessary to learn to deal with stress in different ways if you have had a tough time managing stress in the past. This can require minute by minute attention at times.