

# Clinical Thyroidology<sup>®</sup> for the Public



AMERICAN THYROID ASSOCIATION  
Optimal Thyroid Health for All

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Grani G et al. 2020 Selective use of radioactive iodine therapy for papillary thyroid cancers with low or lower-intermediate recurrence risk. *J Clin Endocrinol Metab*. Epub 2020 Dec 30. PMID: 33377969.

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Sutton W et al 2021 Understanding surgical decision-making in older adults with differentiated thyroid cancer: A discrete choice experiment. *Surgery* 169:14–21. PMID: 32475718.

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Current guidelines recommend the use of levothyroxine as the recommended form of thyroid hormone replacement. However, some patients and practitioners prefer desiccated thyroid extract (DTE) to treat hypothyroidism as a more “natural” option for treatment. This study was done to understand whether the level of TSH varies significantly over time in patients being treated with DTE as compared to TSH levels in patients taking levothyroxine.

Kuye R et al 2020 Thyroid Stimulating Hormone Stability in Patients Prescribed Synthetic or Desiccated Thyroid Products: A Retrospective Study. *Ann Fam Med* 18:452–454.

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One question of interest has been the connection between the level of thyroid hormones and the rate of physical activity. However, most of the previous research in this topic has been done in athletes and military personnel, both of whom are physically fit. The aim of this study is to investigate the connection between the thyroid function and physical activity over time in general population.

Dueñas OHRD et al. 2020 Thyroid function and physical activity: A population-based cohort study. *Thyroid*. Epub 2020 Dec 23. PMID: 33198599.

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**Low vitamin D levels increase chances of developing low parathyroid hormone levels after thyroid surgery**

One problem that can happen after thyroid surgery is development of low calcium levels due to damage to the parathyroid glands. Their job is to make a single hormone (parathyroid hormone), which works with vitamin D in the body to control a person’s calcium levels. The research described here studied people who had surgery to remove all, or part, of their thyroid to learn if low vitamin D levels before thyroid surgery increases the risk of low parathyroid hormone levels after surgery.

Vaitsi K et al 2021 Pre-operative vitamin D deficiency is a risk factor for post-thyroidectomy hypoparathyroidism: A systematic review and meta-analysis of observational studies. *J Clin Endocrinol Metab*. Epub 2021 Jan 23:dgab039. PMID: 33484571.

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**Clinical Thyroidology for the Public**

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## EDITOR'S COMMENTS

Welcome to another issue of *Clinical Thyroidology for the Public*. In this journal, we will bring to you the most up-to-date, cutting edge thyroid research. We also provide even faster updates of late-breaking thyroid news through [Twitter](#) at [@thyroidfriends](#) and on [Facebook](#). Our goal is to provide patients with the tools to be the most informed thyroid patient in the waiting room. Also check out our friends in the **Alliance for Thyroid Patient Education**. The **Alliance** member groups consist of: the *American Thyroid Association, Bite Me Cancer, the Graves' Disease and Thyroid Foundation, the Light of Life Foundation, MCT8 – AHDS Foundation, ThyCa: Thyroid Cancer Survivors' Association, Thyroid Cancer Canada, Thyroid Cancer Alliance* and *Thyroid Federation International*.

We invite all of you to join our **Friends of the ATA** community. It is for you that the American Thyroid Association (ATA) is dedicated to carrying out our mission of providing reliable thyroid information and resources, clinical practice guidelines for thyroid detection and treatments, resources for connecting you with other patients affected by thyroid conditions, and cutting edge thyroid research as we search for better diagnoses and treatment outcomes for thyroid disease and thyroid cancer. We thank all of the *Friends of the ATA* who support our mission and work throughout the year to support us. We invite you to help keep the ATA mission strong by choosing to make a donation that suits you — it takes just one moment to give online at: [www.thyroid.org/donate](http://www.thyroid.org/donate) and all donations are put to good work. The ATA is a 501(c)3 nonprofit organization and your gift is tax deductible.

The Covid-19 pandemic has caused an unprecedented upheaval in our daily lives and presented extremely difficult challenges to our healthcare system. There is a lot of information circulating around. We at the American Thyroid Association would like to make sure that you all have access to most accurate, reliable, fact-based and updated information. (<https://www.thyroid.org/covid-19/>)

May is [International Thyroid Awareness Month](#).

**In this issue, the studies ask the following questions:**

- What are the effects of COVID 19 on the thyroid?
- Should RAI be used in the treatment of low risk thyroid cancer?
- Are there differences in surgical options for thyroid cancer in older patients?
- Is there a difference in TSH variation in patients on desiccated thyroid extract as compared to levothyroxine?
- Does thyroid function impact physical activity?
- Is vitamin D deficiency a risk factor for post-operative hypoparathyroidism?

We welcome your feedback and suggestions. Let us know what you want to see in this publication. I hope you find these summaries interesting and informative.

— Alan P. Farwell, MD,





## THYROID FUNCTION TESTS

### COVID-19 and the thyroid

#### BACKGROUND

The last year has seen the emergence of COVID-19 infection caused by the SARS-Cov-2 virus worldwide. Some reports suggest that the thyroid may be affected by COVID 19, including damage to thyroid cells and reduced staining for thyroid stimulating hormone (TSH) in the anterior pituitary gland of patients infected with severe COVID 19. Nevertheless, the effects on thyroid function of COVID-19 remain unclear. Some studies have shown an increased risk of subacute thyroiditis, while others have observed a generalized reduction in serum TSH, total thyroxine (T<sub>4</sub>), and triiodothyronine (T<sub>3</sub>) concentrations that is more consistent with response of the thyroid to general illness.

This study was done to look for the frequency of abnormal thyroid function in patients with COVID 19.

#### THE FULL ARTICLE TITLE

Khoo B et al 2021 Thyroid function before, during, and after COVID-19. J Clin Endocrinol Metab 106: e803–e811. PMID: 33180932.

#### SUMMARY OF THE STUDY

This study was done in the United Kingdom. Adults over 18 years of age who were admitted to three hospitals

with a clinical suspicion of the COVID-19 were studied. Clinical data was reviewed. Patients with a history of thyroid disease were excluded. Thyroid tests were done before, during the admission and after the discharge.

There was no significant difference in patients with thyroid disease among patients who had the infection vs. those who did not. The TSH and free T<sub>4</sub> levels were slightly lower in the patients with the infection, but, still in the normal range for those thyroid tests. There was also no significant connection between the thyroid levels and survival in patients with the infection.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

Most of the patients who had the acute COVID -19 infection as well as those who recovered had normal thyroid levels. Though slightly lower levels (within the normal range) were noted in some patients, they returned to normal. This study shows that the thyroid hormone levels remain fairly stable despite the COVID-19 infection in patients who did not have a pre existing thyroid disorder.

—Vibhavasu Sharma, MD, FACE

#### ATA THYROID BROCHURE LINKS

Thyroid Function Tests: <https://www.thyroid.org/thyroid-function-tests/>

Novel Coronavirus (COVID-19) and the Thyroid: <https://www.thyroid.org/covid-19/coronavirus-frequently-asked-questions/>

#### ABBREVIATIONS & DEFINITIONS

**Thyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland. T<sub>4</sub> gets converted to the active hormone T<sub>3</sub> in various tissues in the body.

**Triiodothyronine (T<sub>3</sub>):** the active thyroid hormone, usually produced from thyroxine.

**Triiodothyronine (T<sub>3</sub>):** the active thyroid hormone, usually produced from thyroxine, available in pill form as Cytomel™.

**TSH: thyroid stimulating hormone** — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.





## THYROID CANCER

### Less use of radioactive iodine in low risk thyroid cancer is safe, though it may take longer to be certain about the response to treatment.

#### BACKGROUND

Thyroid cancer is the fastest rising cancer in women. Overall, the prognosis for thyroid cancer patients is excellent because we have very effective treatments. Surgery is the first option and, in many cases, is curative. The next option is radioactive iodine therapy, which acts as a “magic bullet” to seek out and destroy any remaining thyroid cancer cells after surgery. For many years, most patients would get a total thyroidectomy and radioactive iodine therapy. Response to treatment would then be monitored by regular neck ultrasounds and blood tests for the thyroid-specific protein thyroglobulin. A negative ultrasound and undetectable thyroglobulin level means no evidence of the thyroid cancer.

However, there have been significant changes in how we treat thyroid cancer in the last 10-15 years. Most importantly, we have realized that many thyroid cancers are low risk for recurrence and do not require as much aggressive treatment as was previously used in order for patients to have a good prognosis. This means that less extensive surgery (lobectomy vs total thyroidectomy) and less radioactive iodine therapy are being administered for these types of low risk cancers. That does change the way we are able to evaluate the response to treatment in regards to neck ultrasounds and thyroglobulin levels.

This study was done to determine the safety and treatment response of patients with low risk thyroid cancer who did not receive radioactive iodine therapy compared to those who did.

#### ORIGINAL ARTICLE TITLE

Grani G et al. 2020 Selective use of radioactive iodine therapy for papillary thyroid cancers with low or lower-intermediate recurrence risk. *J Clin Endocrinol Metab*. Epub 2020 Dec 30. PMID: 33377969.

#### SUMMARY OF THE STUDY

The patients in this study were divided in two groups—those who were diagnosed and treated for thyroid cancer in a more aggressive time period (from 2005- June 2011) and a second group that was diagnosed and treated between July 2011 and December 2018. Of the 116 patients in group 1, 90 (77.6%) received radioactive iodine therapy as compared to only 10 (6.4%) of the 156 patients in group 2. Residual thyroid cancer on ultrasound was rare in both groups and there were no significant differences in the patients who received radioactive iodine therapy than those that didn't from this perspective. There was a bit higher incidence of “grey zone” responses (responses in which thyroglobulin levels were low but were not completely undetectable) in the group of patients that received less radioactive iodine therapy (second group).

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that withholding radioactive iodine therapy in patients with low risk thyroid cancer is safe and patients do well. However, it does lead to a higher rate of “uncertain” cancer response status. Thus, we need to evaluate the response to treatment differently from those patients who receive radioactive iodine therapy. This is important for patients and physicians to understand so that an educated decision is made about when to proceed with radioactive iodine therapy and what to expect in regards to the follow up testing to determine if there is a cancer recurrence.

— Maria Brito, MD





## THYROID CANCER, continued

### ATA THYROID BROCHURE LINKS

Radioactive Iodine Therapy: <https://www.thyroid.org/radioactive-iodine/>

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

### ABBREVIATIONS & DEFINITIONS

**Papillary thyroid cancer:** the most common type of thyroid cancer. There are 4 variants of papillary thyroid cancer: classic, follicular, tall-cell and noninvasive follicular thyroid neoplasm with papillary-like nuclear features (NIFTP).

**Radioactive iodine (RAI):** this plays a valuable role in diagnosing and treating thyroid problems since it is taken up only by the thyroid gland. I-131 is the destructive form used to destroy thyroid tissue in the treatment of thyroid cancer and with an overactive thyroid. I-123 is the non-destructive form that does not damage the thyroid and is used in scans to take pictures of the thyroid (*Thyroid Scan*) or to take pictures of the whole body to look for thyroid cancer (*Whole Body Scan*).

**Thyroglobulin:** a protein made only by thyroid cells, both normal and cancerous. When all normal thyroid tissue is destroyed after radioactive iodine therapy in patients with thyroid cancer, thyroglobulin can be used as a thyroid cancer marker in patients that do not have thyroglobulin antibodies.

**Cancer recurrence:** this occurs when the cancer comes back after an initial treatment that was successful in destroying all detectable cancer at some point.



## THYROID CANCER

### Older age and other medical conditions are important considerations when deciding surgical management for thyroid cancer patients

#### BACKGROUND

The number of Americans aged 65 years and older is expected to increase by 50% from 2016 to 2030. The risk of developing thyroid nodules increases with age. The concern with a thyroid nodule is whether it is a thyroid cancer. Fortunately, only ~5% of thyroid nodules are cancerous. Despite an increased risk for having a thyroid nodule, older adults actually have an overall lower risk of thyroid cancer compared to younger adults. However, if thyroid cancer is detected in older adults, it has a higher likelihood of being high-risk. Even though surgery to remove the thyroid (thyroidectomy) is considered the standard of care for the initial management of patients with thyroid cancer, prior studies have shown that differences exist in their surgical care. This study aimed to identify factors that influence decisions regarding surgery in older adults with thyroid cancer.

#### THE FULL ARTICLE TITLE

Sutton W et al 2021 Understanding surgical decision-making in older adults with differentiated thyroid cancer: A discrete choice experiment. *Surgery* 169:14–21. PMID: 32475718.

#### SUMMARY OF THE STUDY

In this study, a survey was designed to determine surgeons' preferences for recommending thyroid surgery for thyroid cancer in older patients. The survey included three main clinical storylines: (i) cancer size <4 cm without spread to the lymph nodes, (ii) cancer size <4 cm with spread to the lymph nodes, and (iii) cancer size  $\geq$ 4 cm without spread to the lymph nodes. For each storylines, 8 different patients were presented who differed in age, other medical conditions and functional status (ability for patients to perform normal daily activities) for a total of 24 clinical storylines presented in the survey. The survey also included questions on surgeon characteristics and methods they use to assess whether patients are able to tolerate surgery.

The survey was administered online to all active members of the American Association of Endocrine Surgeons who practice in the United States. Overall, 31.7% of surgeons responded to the survey with 25.7% completing all survey portions. When analyzing responses, the authors found that patient age and presence of other medical conditions were the main factors influencing decision to pursue surgery in patients with thyroid cancer, regardless of cancer size or extent of disease. Older age and presence of other medical conditions increased likelihood of deferring surgery and monitoring the cancer with ultrasound in all storylines. There was significant variation in treatment choices for each storyline depending on clinical and surgeon characteristics. The number of additional medical conditions, their ability to perform normal daily activities and the "eyeball test", were the most commonly reported factors to evaluating the patient's ability to tolerate surgery.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study found that patient age and additional medical conditions were the most significant predictors for deciding whether patients should undergo surgery, as well as the extent of surgery, for thyroid cancer. Additionally, the study showed that there is significant variation in treatment choices for adults with thyroid cancer. It is important to always weigh the potential risks of surgery against the likelihood of thyroid cancer progressing, especially in older adults and those with multiple additional medical conditions. It is also important to better understand reasons behind variation in care and to determine if there is a scientific evidence to support this variation.

— Maria Papaleontiou, MD





## THYROID CANCER, continued

### ATA THYROID BROCHURE LINKS

Thyroid Nodules: <https://www.thyroid.org/thyroid-nodules/>

Thyroid Cancer (Papillary and Follicular): <https://www.thyroid.org/thyroid-cancer/>

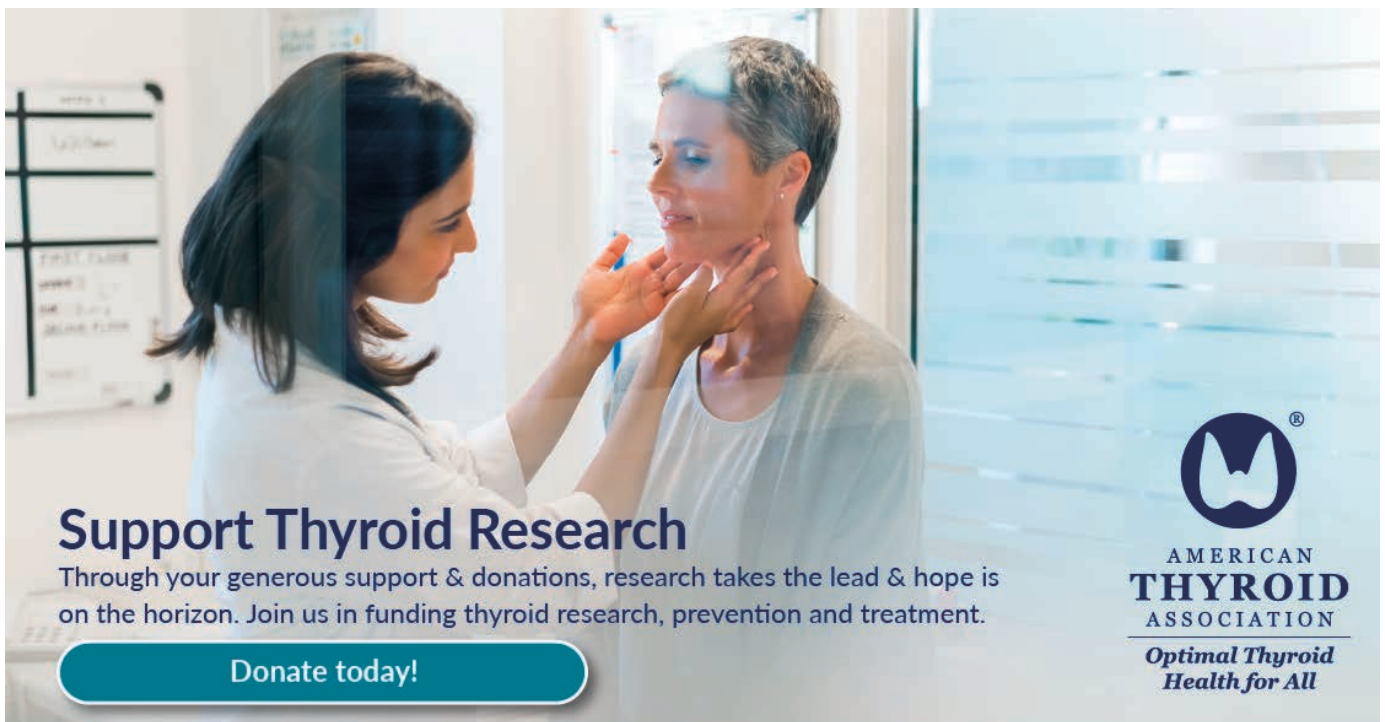
Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>

### ABBREVIATIONS & DEFINITIONS

**Thyroid nodule:** an abnormal growth of thyroid cells that forms a lump within the thyroid. While most thyroid nodules are non-cancerous (Benign), ~5% are cancerous.


**Lymph node:** bean-shaped organ that plays a role in removing what the body considers harmful, such as infections and cancer cells.

**Thyroidectomy:** surgery to remove the entire thyroid gland. When the entire thyroid is removed it is termed a total thyroidectomy. When less is removed, such as in removal of a lobe, it is termed a partial thyroidectomy.



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## HYPOTHYROIDISM

### The proportion of in-range TSH values does not differ in users of desiccated thyroid extract compared to levothyroxine

#### BACKGROUND

Hypothyroidism is a common disorder affecting the general population and thyroid hormone is one of the most frequently prescribed medications in the United States. Current guidelines recommend the use of levothyroxine as the recommended form of thyroid hormone replacement. However, some patients and practitioners prefer desiccated thyroid extract (DTE) to treat hypothyroidism as a more “natural” option for treatment. DTE is a thyroid hormone pill made from animal thyroid glands. DTE has a significantly higher content of T<sub>3</sub> than human thyroids produce, which may lead to blood levels higher than normal of this hormone. Also, T<sub>3</sub> has a short half-life which causes daily fluctuations in T<sub>3</sub> levels in patients taking these preparations. In addition, there have been concerns regarding the consistency of the amount of hormones batch to batch in DTE products.

Some small studies have reported some patients experience better symptom control and quality of life when taking DTE compared with levothyroxine. However, there are no long term randomized clinical studies that evaluate the effects of DTE on bone health or risk for atrial fibrillation, which are adverse effects if the thyroid hormone replacement dose is too high.

Thyroid stimulating hormone (TSH) provides information about thyroid hormone levels and is used to monitor thyroid hormone therapy and assess whether a dose is adequate. This study was done to understand whether the level of TSH varies significantly over time in patients being treated with DTE as compared to TSH levels in patients taking levothyroxine.

#### THE FULL ARTICLE TITLE

Kuye R et al 2020 Thyroid Stimulating Hormone Stability in Patients Prescribed Synthetic or Desiccated Thyroid Products: A Retrospective Study. *Ann Fam Med* 18:452–454.

#### SUMMARY OF THE STUDY

This study was done using data from electronic medical records, laboratory and pharmacy records from Kaiser Permanente Colorado patients. Patients who were at least 18 years of age, who had been treated with either levothyroxine or DTE between 2005 and 2015 were eligible to be included. Patients with diagnosis of Hashimoto’s thyroiditis, pituitary disease, thyroid cancer, pregnancy, treatment with radioactive iodine were excluded. Data was collected for a 3 year period since the first date a patient filled a prescription. The main outcome examined was the proportion of TSH values within the normal range (0.32-5.5 mIU/L). Other outcomes examined included the proportion of TSH values in the normal range throughout the 3 year period, the variability of TSH values between visits and the number of TSH values.

There were a total of 435 DTE users and 435 levothyroxine users. The TSH was checked more frequently in the levothyroxine users than in the DTE users, but the difference was not significant. The proportion of TSH in normal range did not differ between the groups (levothyroxine users: 79.1%; DTE users: 79.3%). Although 60% of patients in each group had TSH values that stayed in the normal range throughout the 3 years, there was more visit-to-visit variability in the TSH values of the DTE users than levothyroxine users.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study suggests that the proportion of the TSH values within reference range did not differ between patients using DTE or levothyroxine for treatment of hypothyroidism. A strength of this study is the fact that they matched patients 1:1 on sex, age and race/ethnicity for both groups. However, the actual reason for the hypothyroidism was not described, as individuals with the diagnosis of Hashimoto’s thyroiditis and other common causes for hypothyroidism were excluded. It is likely that patients







## HYPOTHYROIDISM, continued

who had hypothyroidism due to surgery represented most of patients studied and therefore it is not clear whether the results would have been the same had the other causes been included. However, the fact that this study showed less variability visit to visit in TSH levels in patients who

were taking levothyroxine suggests that levothyroxine remains the preferable treatment for patients for whom very little TSH variability is desired such as those with thyroid cancer or women during pregnancy.

— Jessie Block-Galarza, MD

### ATA THYROID BROCHURE LINKS

Thyroid Hormone Treatment: <https://www.thyroid.org/thyroid-hormone-treatment/>

Hypothyroidism (Underactive): <https://www.thyroid.org/hypothyroidism/>

### ABBREVIATIONS & DEFINITIONS

**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

**Levothyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tirosint™ and generic preparations.

**Desiccated thyroid extract (DTE):** thyroid hormone pill made from animal thyroid glands. Currently desiccated thyroid extract is made from pig thyroids and is available as Armour Thyroid™ and Nature-Throid™.

**Hashimotos thyroiditis:** the most common cause of hypothyroidism in the United States. It is caused by antibodies that attack the thyroid and destroy it.



## THYROID FUNCTION

### Thyroid function has no impact on physical activity in individuals aged 46-89 years

#### BACKGROUND

Thyroid hormone has an important role in regulating the body's metabolism. When thyroid hormone levels are low, metabolism slows down, energy is decreased and patients may gain weight and have a slow heart rate. This is usually reversed when thyroid hormone levels return to normal by treatment with levothyroxine. When thyroid hormone levels are high, metabolism speeds up, energy may be initially increased and patients may lose weight and have a fast heart rate. Muscle weakness can develop if thyroid hormone levels are either too high or too low.

The effects of thyroid hormone on muscle tissue and the heart have been studied in details. One question of interest has been the connection between the level of thyroid hormones and the rate of physical activity. However, most of the previous research in this topic has been done in athletes and military personnel, both of whom are physically fit.

The aim of this study is to investigate the connection between the thyroid function and physical activity over time in general population.

#### THE FULL ARTICLE TITLE

Dueñas OHRD et al. 2020 Thyroid function and physical activity: A population-based cohort study. *Thyroid*. Epub 2020 Dec 23. PMID: 33198599.

#### SUMMARY OF THE STUDY

The study was done in the Netherlands. The participants had been already registered to be part of a large

ongoing study (Rotterdam Study) initiated in 1989; all of them were 45 years or older. The original number of participants in Rotterdam study is over 7,000; however, in the current study, only individuals (2470) with thyroid function studies were included (TSH, Free T<sub>4</sub> and Thyroid Peroxidase antibodies). The participant's physical activity was assessed by a validated questionnaire, which obtained once in 2006 to 2008 and again 2008 to 2013.

The average age of participants was 57.3 years and 58% were women. The average TSH was 2.04 mIU/L (normal range: 0.4 to 4.0). The average of Free T<sub>4</sub> was 1.21 ng/dL (normal range: 0.85 to 1.95). The result of the study showed no association between the physical activity and the levels of TSH, Free T<sub>4</sub> or thyroid peroxidase antibodies.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

This study showed no impact from thyroid function on physical activity in middle-aged to old individuals from the general population. However, they only obtained information regarding physical activity duration not intensity of exercise, so that still needs to be studied. Finally, they did not separate out patients that were on levothyroxine because their thyroid hormone levels were too low. This would be an interesting future study.

— Shirin Haddady, MD, MPH

#### ATA THYROID BROCHURE LINKS

Thyroid Function Tests: <https://www.thyroid.org/thyroid-function-tests/>

Thyroid Hormone Treatment: <https://www.thyroid.org/thyroid-hormone-treatment/>

Hypothyroidism (Underactive): <https://www.thyroid.org/hypothyroidism/>





## THYROID FUNCTION, continued

### ABBREVIATIONS & DEFINITIONS

**Hypothyroidism:** a condition where the thyroid gland is underactive and doesn't produce enough thyroid hormone. Treatment requires taking thyroid hormone pills.

**Levothyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland and available in pill form as Synthroid™, Levoxyl™, Tirosint™ and generic preparations.

**TSH: thyroid stimulating hormone** — produced by the pituitary gland that regulates thyroid function; also the best screening test to determine if the thyroid is functioning normally.

**Thyroxine (T<sub>4</sub>):** the major hormone produced by the thyroid gland. T<sub>4</sub> gets converted to the active hormone T<sub>3</sub> in various tissues in the body.

**Thyroid peroxidase antibodies:** these are antibodies that attack the thyroid instead of bacteria and viruses, they are a marker for autoimmune thyroid disease, which is the main underlying cause for hypothyroidism and hyperthyroidism in the United States.





## THYROID SURGERY

### Low vitamin D levels increase chances of developing low parathyroid hormone levels after thyroid surgery

#### BACKGROUND

Surgery to remove all, or part, the thyroid gland is commonly needed to treat some types of thyroid disease. One problem that can happen after thyroid surgery is development of low calcium levels due to damage to the parathyroid glands. The parathyroid glands are four very small structures (each about the size of a grain of rice) that live in the neck on the surface of the thyroid gland. Their job is to make a single hormone (parathyroid hormone), which works with vitamin D in the body to control a person’s calcium levels. When calcium levels are low, parathyroid hormone levels are increased to help increase calcium levels.

It is critical that the parathyroid glands work normally after thyroid surgery. If they do not, which can happen if the parathyroid glands are damaged, removed or irritated during surgery, calcium levels will be too low. This can cause serious side effects, including severe muscle cramps and seizures. For this reason, understanding how best to preserve parathyroid gland function after thyroid surgery is very important.

The research described here studied people who had surgery to remove all, or part, of their thyroid to learn if low vitamin D levels before thyroid surgery increases the risk of low parathyroid hormone levels after surgery.

#### FULL ARTICLE TITLE

Vaitsi K et al 2021 Pre-operative vitamin D deficiency is a risk factor for post-thyroidectomy hypoparathyroidism: A systematic review and meta-analysis of observational studies. *J Clin Endocrinol Metab.* Epub 2021 Jan 23;dgab039. PMID: 33484571.

#### SUMMARY OF THE STUDY

In order to better understand the possible effect of low vitamin D levels on parathyroid gland function after thyroid surgery, the authors of this study collected information published between 2009 and 2020 on the relationship between parathyroid gland activity, thyroid surgery and vitamin D levels. They then used mathematical testing (statistics) to see if low vitamin D levels before thyroid surgery increased the risk that the parathyroid glands would not work well after surgery (hypoparathyroidism, or low parathyroid hormone levels).

Overall, the authors included 755,585 people who underwent thyroid surgery. They found that mild or moderately low vitamin D levels before thyroid surgery increased the risk of temporary (lasting less than 6 months) low parathyroid hormone levels after thyroid removal. If very low vitamin D levels were present before thyroid surgery, patients also had an increased risk of having permanent low parathyroid hormone levels after surgery.

#### WHAT ARE THE IMPLICATIONS OF THIS STUDY?

The study authors found that low vitamin D levels before thyroid surgery increased the risk that the parathyroid glands would not work well after surgery, which could cause significant health problems. For this reason, the authors suggest that people who are planning to undergo thyroid surgery should have their vitamin D levels checked and, if these levels are low, should take a vitamin D supplement before surgery. This might decrease the risk of having a low parathyroid hormone level, and associated side effects, after thyroid surgery.

— Jason D. Prescott, MD PhD

#### ATA THYROID BROCHURE LINKS

Thyroid Surgery: <https://www.thyroid.org/thyroid-surgery/>





## THYROID SURGERY, continued

### ABBREVIATIONS & DEFINITIONS

**Parathyroid glands:** usually four small glands located around the thyroid that secrete parathyroid hormone (PTH) which regulates the body's calcium levels.

**Parathyroid hormone (PTH):** the hormone that regulates the body's calcium levels. High levels of PTH cause hypercalcemia, or too much calcium in the blood. Low levels of PTH cause hypocalcemia, or too little calcium in the blood.

**Hypoparathyroidism:** low calcium levels due to decreased secretion of parathyroid hormone (PTH) from the parathyroid glands next to the thyroid. This can occur as a result of damage to the glands during thyroid surgery and usually resolves. This may also occur as a result of autoimmune destruction of the glands, in which case it is usually permanent.

**Hypocalcemia:** low calcium levels in the blood, a complication from thyroid surgery that is usually short-term and relatively easily treated with calcium pills. If left untreated, low calcium may be associated with muscle twitching or cramping and, if severe, can cause seizures and/or heart problems.

**Vitamin D:** a vitamin that is important for maintaining calcium levels by increasing the absorption of calcium from the gut. Vitamin D is made in our sun after exposure to the sun.





# Clinical Thyroidology® for the Public

## ATA Alliance for Thyroid Patient Education

**GOAL** The goal of our organizations is to provide accurate and reliable information for patients about the diagnosis, evaluation and treatment of thyroid diseases. We look forward to future collaborations and continuing to work together toward the improvement of thyroid education and resources for patients.



ThyCa: Thyroid Cancer Survivors' Association, Inc.<sup>SM</sup>  
[www.thyca.org](http://www.thyca.org)



MCT8 - AHDS Foundation



Thyroid Cancer Canada  
Cancer de la thyroïde Canada



Thyroid Federation International

### American Thyroid Association

[www.thyroid.org](http://www.thyroid.org)

ATA Patient Resources:

[www.thyroid.org/thyroid-information/](http://www.thyroid.org/thyroid-information/)

Find a Thyroid Specialist: [www.thyroid.org](http://www.thyroid.org)

(Toll-free): 1-800-THYROID

[thyroid@thyroid.org](mailto:thyroid@thyroid.org)

### Bite Me Cancer

[www.bitemecancer.org](http://www.bitemecancer.org)

[info@bitemecancer.org](mailto:info@bitemecancer.org)

### Graves' Disease and Thyroid Foundation

[www.gdatf.org](http://www.gdatf.org)

(Toll-free): 877-643-3123

[info@ngdf.org](mailto:info@ngdf.org)

### Light of Life Foundation

[www.checkyourneck.com](http://www.checkyourneck.com)

[info@checkyourneck.com](mailto:info@checkyourneck.com)

### MCT8 – AHDS Foundation

[mct8.info](http://mct8.info)

[Contact@mct8.info](mailto:Contact@mct8.info)

### Thyca: Thyroid Cancer Survivors' Association, Inc.

[www.thyca.org](http://www.thyca.org)

(Toll-free): 877-588-7904

[thyca@thyca.org](mailto:thyca@thyca.org)

### Thyroid Cancer Alliance

[www.thyroidcanceralliance.org](http://www.thyroidcanceralliance.org)

[www.thyroidcancerpatientinfo.org](http://www.thyroidcancerpatientinfo.org)

Rotterdam, The Netherlands

### Thyroid Cancer Canada

[www.thyroidcancercanada.org](http://www.thyroidcancercanada.org)

416-487-8267

[info@thyroidcancercanada.org](mailto:info@thyroidcancercanada.org)

### Thyroid Federation International

[www.thyroid-fed.org](http://www.thyroid-fed.org)

[tfi@thyroid-fed.org](mailto:tfi@thyroid-fed.org)





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## Connect with the ATA on Social Media



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[American Thyroid Association Trainees](#)



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[@clinicalthyroid](#), [@VEndocrinology](#), [@thyroidjournal](#)



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AMERICAN  
**THYROID**  
ASSOCIATION  
ATA | Founded 1923

# Friends of the ATA




FOUNDED 2005



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-  Updates on the latest patient resources through the ATA website and elsewhere on the world wide web
-  Special e-mail alerts about thyroid topics of special interest to you and your family

We will use your email address to send you *Friends of the ATA e-news* and occasional email updates. We won't share your email address with anyone, and you can unsubscribe at any time.

[www.thyroid.org](http://www.thyroid.org)





## JOIN US

### PLEASE JOIN OUR JOURNEY TO ADVANCED DISCOVERIES AND TREATMENT FOR THYROID DISEASE AND THYROID CANCER

As patients with thyroid disease navigate the challenges to their quality of life and researchers and physicians look for more effective directions, we at the ATA have our own destination—**funding for critical thyroid research, prevention, and treatment.** For 94 years, the ATA has led the way in thyroidology. It's a daily obstacle course to find new drugs, better treatments, advanced surgical methods, and more rapid diagnoses for the 20 million Americans who have some form of thyroid disease.



“The ATA was a valuable resource for our family when my dad was diagnosed with Anaplastic Thyroid Cancer. When you're faced with a detrimental diagnosis where even a few days can make the difference in life or death, understanding your options quickly is critical. The ATA website offers a one-stop shop for patients and caregivers to find specialists, current clinical trials, general thyroid cancer information, and links to other patient support groups and information.”

Mary Catherine Petermann

- Father who was diagnosed with Anaplastic Thyroid Cancer in 2006
- He was treated at Mayo Clinic
- He has clean scans as of October 2016

*The ATA has paved the way with management guidelines for clinicians who diagnose and treat thyroid disease. For physicians treating pregnant women diagnosed with thyroid disease, our recent publication presents 97 evidence-based recommendations making sure that best practices are implemented with the latest, most effective treatment.*



Through your generous support and donations, research takes the lead and hope is on the horizon. **Will you join us** in our campaign to raise **\$1.5 million** for thyroid research, prevention, and treatment? Your compassionate, tax-deductible gift will provide funds for:

- Research grants that pave the way for 1,700 ATA physicians and scientists who have devoted their careers to understanding the biology of and caring for patients affected by thyroid disease.
- Patient education for individuals and families looking for life-changing clinical trials, the best thyroid specialists, and cutting edge treatment and drugs.
- Professional education that offers a wealth of knowledge and leading-edge research for trainees and practitioners.
- A website that is the go-to resource for thyroid information for patients and practitioners alike. In 2016 alone, there were more than 3,700,000 website views of ATA's library of online thyroid information patient brochures.

Donations **of all sizes** will change the future for thyroid patients. You will make a direct impact on patients like Mary Catherine's father as he deals with Anaplastic Thyroid Cancer. You will help scientists like ATA Associate Member Julia Rodiger, Ph.D., a scientist at the National Institutes of Health, as she analyzes thyroid hormones for intestinal stem cell development.