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Facial Rejuvenation: Effectiveness of the Facelift Combined with Stem Cells and Lipograft Techniques

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Abstract

A documentary review was carried out on the production and publication of research papers related to the study of the Facial Rejuvenation and Lifting variables. The purpose of the bibliometric analysis proposed in this document was to know the main characteristics of the volume of publications registered in the Scopus database during the period 2018-2023, achieving the identification of 163 publications. The information provided by this platform was organized through graphs and figures categorizing the information by Year of Publication, Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors regarding the proposed theme is referenced through a qualitative analysis. Among the main findings made through this research, it is found that the United States, with 48 publications, was the country with the highest scientific production registered in the name of authors affiliated with institutions in that nation. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material regarding the study of the Facial Rejuvenation and Lifting variables was Medicine with 155 published documents, and the most used Type of Publication during the period indicated above were Journal Articles with 66% of the total scientific production.

Keywords: *Facial Rejuvenation, Lifting, Stem Cells, Lipografts.*

Introduction

Cosmetic surgery is that practiced in order to repair or reconstruct the human anatomy, so it is carried out in patients who have suffered some trauma that has affected one or some areas of their body, either accidentally, some acquired congenitally or even in order to improve appearance or functionality. Among the aesthetic procedures, one of the most frequent is the facelift, also known as rhytidectomy, it is a surgical procedure designed to reduce the signs of aging in the face and neck. The first modern facelift is believed to have been performed by French surgeon Eugène von Holländer in 1901. Since then, the procedure has evolved significantly in terms of techniques and results. Today, the facelift is one of the most common cosmetic surgeries performed worldwide, with variations that are tailored to patients' individual needs and preferences.(Montesdeoca, Jiménez, Campoverde, & Salas, 2023)(Pineda Valencia, 2019)(Centurion-Rivas, Mirez, & Masson, 2022)

Currently, facelift procedures have an interesting variety, which, with technological advances in the area of medicine, can optimize their results; Among these variations are the facelift combined with stem cells, and lipograft techniques. The use of stem cells in facelift is a relatively new approach that aims to improve the results and recovery of the procedure, while facelift with lipograft techniques involves the transfer of autologous fat from one part of the body to another

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to add volume and improve appearance. Below are the advantages of each of the procedures

Stem Cell Facelift

Facelift With Lipograft Techniques

Advantages

Stimulation of tissue regeneration: Stem cells have the unique ability to differentiate into various cell types, which can help regenerate and repair damaged or aged tissues on the face.

Improved Volumization: Lipograft can be used to add volume to areas of the face that have lost fat with age, such as the cheekbones, cheeks, or regions around the eyes, which can provide a more youthful appearance and restore lost fullness.

Improved skin quality: Stem cells can improve skin quality by stimulating collagen and elastin production, which can help reduce the appearance of wrinkles, fine lines, and sagging.

More natural results: By using autologous fat instead of synthetic fillers, the results tend to be more natural and long-lasting. The transferred fat can better integrate with the surrounding tissues and provide a smoother and more harmonious appearance.

Reduced inflammation and recovery time: It has been suggested that stem cells may help reduce inflammation after the procedure, which can speed recovery and minimize downtime.

Improved skin texture: The transferred fat can have a positive effect on skin texture and quality, as it contains stem cells and other components that can stimulate collagen production and improve skin elasticity.

Longer-lasting results: By improving the skin's ability to regenerate, the results of a stem cell facelift are expected to be longer-lasting compared to traditional procedures.

Customization of results: Lipograft allows the plastic surgeon to sculpt and shape the face more precisely, providing the opportunity to customize the results to the patient's specific needs and desires.

Lower risk of complications: Since stem cells are biologically compatible with the human body, there may be a lower risk of rejection or complications associated with the use of synthetic materials or chemicals.

Lower risk of rejection or adverse reactions: By using autologous fat from the patient's own body, there is a lower risk of rejection or adverse reactions compared to using synthetic materials.

STEM CELL FACELIFT	**FACELIFT WITH LIPOGRAFT TECHNIQUES**
ADVANTAGES	

Stimulation of tissue regeneration: Stem cells have the unique ability to differentiate into various cell types, which can help regenerate and repair damaged or aged tissues on the face.	**Improved Volumization:** Lipograft can be used to add volume to areas of the face that have lost fat with age, such as the cheekbones, cheeks, or regions around the eyes, which can provide a more youthful appearance and restore lost fullness.
Improved skin quality: Stem cells can improve skin quality by stimulating collagen and elastin production, which can help reduce the appearance of wrinkles, fine lines, and sagging.	**More natural results:** By using autologous fat instead of synthetic fillers, the results tend to be more natural and long-lasting. The transferred fat can better integrate with the surrounding tissues and provide a smoother and more harmonious appearance.
Reduced inflammation and recovery time: It has been suggested that stem cells may help reduce inflammation after the procedure, which can speed recovery and minimize downtime.	**Improved skin texture:** The transferred fat can have a positive effect on skin texture and quality, as it contains stem cells and other components that can stimulate collagen production and improve skin elasticity.
Longer-lasting results: By improving the skin's ability to regenerate, the results of a stem cell facelift are expected to be longer-lasting compared to traditional procedures.	**Customization of results:** Lipograft allows the plastic surgeon to sculpt and shape the face more precisely, providing the opportunity to customize the results to the patient's specific needs and desires.

Lower risk of complications: Since stem cells are biologically compatible with the human body, there may be a lower risk of rejection or complications associated with the use of synthetic materials or chemicals.	**Lower risk of rejection or adverse reactions:** By using autologous fat from the patient's own body, there is a lower risk of rejection or adverse reactions compared to using synthetic materials.

Table 1. Advantages Of Stem Cell Lifting Procedures and Lipograft Techniques.

Fountain: Prepared by the author based on the document "Effect of stem cells derived from adipose tissue on periorbital wrinkles" (Tamayo Carbón, Cuastumal Figueroa, & Quesada Peña, 2022)

It is important to note that research on the use of stem cells in aesthetic procedures is still in its early stages, and more studies are needed to fully understand its effects and benefits, it is crucial to discuss all available options, as well as the potential risks and benefits, with an experienced and qualified plastic surgeon before deciding to undergo a facelift with both stem cell use, as well as with lipograft techniques.

General Objective

To analyze, from a bibliometric and bibliographic perspective, the preparation and publication of research papers in high-impact journals indexed in the Scopus database on the Facial Rejuvenation and Lifting variables during the period 2018-2023.

Methodology

This article is carried out through a mixed orientation research that combines the quantitative and qualitative method.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study of the variables Facial Rejuvenation and Lifting. On the other hand, examples of some research works published in the area of study indicated above are analyzed from a qualitative perspective, based on a bibliographic approach that allows describing the position of different authors regarding the proposed topic. It is important to note that the entire search was carried out through Scopus, managing to establish the parameters referenced in Figure 1.

Methodological Design

PHASE	DESCRIPTION
PHASE 1	Data collection
PHASE 2	Construction of analysis material
PHASE 3	Drafting of conclusions and final document

Table 2. Methodological Design

Source: Own elaboration

Phase 1: Data Gathering

Data collection was carried out from the Search tool on the Scopus website, where 163 publications were obtained from the choice of the following filters:

TITLE-ABS-

KEY (facial AND rejuvenation, AND lifting) AND PUBYEAR > 2017 AND PUBYEAR < 2024

- Published documents whose study variables are related to the study of the Facial Rejuvenation and Lifting variables.
- Limited to the period 2018-2023.
- Without distinction of country of origin.
- Without distinction of area of knowledge.
- Without distinction of type of publication.

Phase 2: Construction of analysis material

The information collected in Scopus during the previous phase is organized and then classified by graphs, figures and tables as follows:

- Co-occurrence of words.
- Country of origin of the publication.
- Area of knowledge.
- Type of publication.

Phase 3: Drafting of the conclusions and final document

In this phase, the analysis of the results previously yielded is carried out, resulting in the determination of conclusions and, consequently, the obtaining of the final document.

2. Results

4.1 Word co-occurrence

Figure 1 shows the co-occurrence of keywords found in the publications identified in the Scopus database.

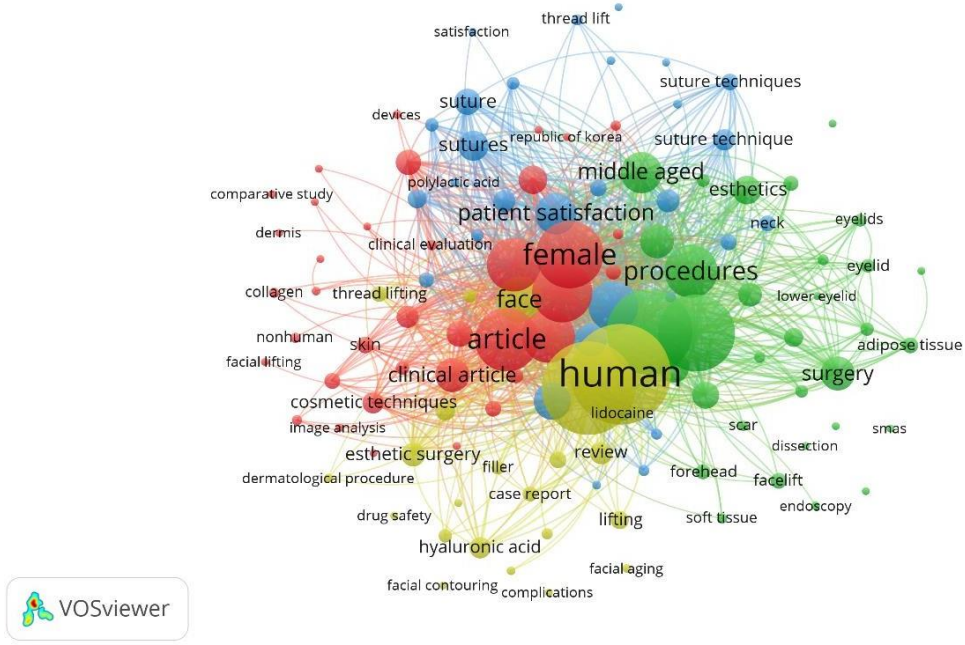

Figure 1. Word co-occurrence

Source: Own elaboration (2024); based on data exported from Scopus.

The above graph shows how the different keywords are related in studies related to lifting procedures and cosmetic surgery, highlighting the central themes and the interconnectedness between them. The keywords with the highest interconnection within each cluster are highlighted below.

- Red Cluster: Seems to focus on terms related to clinical procedures and articles, with terms such as "Clinical Article", "Cosmetic Techniques", "Skin", "Collagen", and "Woman". This suggests a focus on clinical studies and cosmetic techniques, especially in women.

- Green Cluster: Includes terms such as "human", "procedure", "surgery", "face", and "adipose tissue". This cluster could be related to cosmetic surgery and surgical procedures, focusing on the human body.

- Blue Cluster: Contains keywords such as "suture", "Suture technique", and "thread lift". This suggests a focus on suturing techniques and thread lift procedures.

- Yellow Cluster: Includes terms such as "Hyaluronic Acid", "Lifting", and "Facial Contouring". This cluster could be related to facial contouring and rejuvenation products and procedures, such as the use of hyaluronic acid.

Distribution of Scientific Production By Year of Publication

Figure 2 shows how scientific production is distributed according to the year of publication.

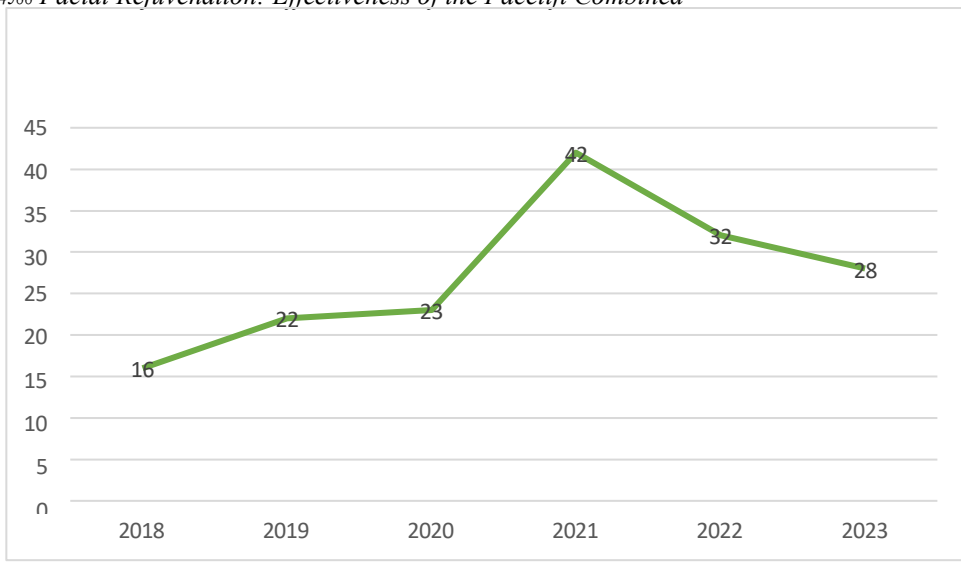

Figure 2. Annual Production of Scientific Articles

Source: Own elaboration (2024); based on data exported from Scopus

The annual distribution of the production of scientific documents published in high-impact journals indexed in the scopus database is evidenced in the previous figure, with 2021 being the year when the largest number of papers were reported on this platform, a total of 42. For 2022 and 2023, this production has fallen significantly, going from 32 to 28 publications, respectively. From 2023, the article entitled "Study of the dynamics of the mid-face lift during hyaluronic acid filler injection using ultrasound imaging" stands out, through which it was possible to identify that the use of ultrasound images during hyaluronic acid injection allows the doctor to visualize in real time the exact location of the filler and monitor its distribution under the skin. This can help ensure accurate placement of the filler, minimizing the risk of incorrect injections that could lead to suboptimal results or complications. Additionally, by lifting the mid-face during the injection, more natural and balanced results can be achieved by addressing specific areas of concern, such as fine lines, wrinkles, and volume loss. This technique can help improve facial symmetry and provide a rejuvenated look without altering the natural facial expression.(Li, y otros, 2023)

Distribution of Scientific Production by Country of Origin.

Figure 3 shows how scientific production is distributed according to the nationality of the authors.

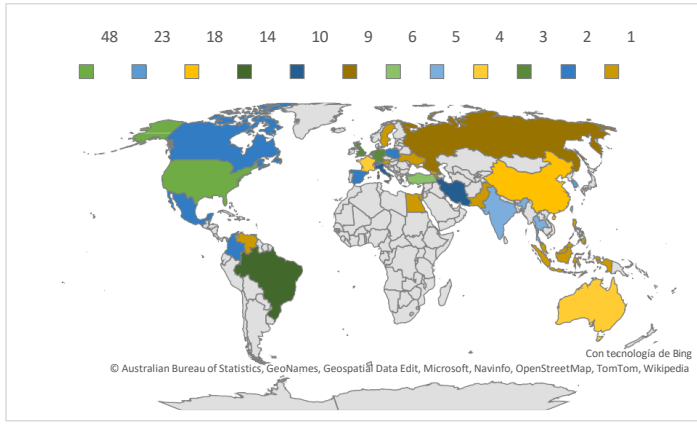

Figure 3. Distribution Of Scientific Production by Country of Origin.

Source: Authors' elaboration (2024); based on data provided by Scopus.

The United States turned out to be the country with the highest number of publications referring to the study of facial rejuvenation and facelift in specialized journals indexed in the Scopus database during the period between 2018 and 2023, followed by South Korea and China with 23 and 18 documents respectively. Brazil, in fourth place, represents the Latin American country with the highest number of publications related to the topic of study proposed in this article, with a total of 14, among which the article entitled "Regen Fat Code: a standardized protocol for facial volumetry and rejuvenation" stands out, whose objective was to apply structural fat grafts to address facial volume deficits. following a recent systematic protocol known as "RF Code" (Regen Fat Code). This protocol has been designed to standardize structural fat transfer procedures, thus ensuring a consistent and efficient application of the technique. This prospective clinical study included 80 healthy participants interested in rejuvenating their face, who were divided into two groups. Group A exclusively received structural fat transfer, while Group B underwent a facelift combined with structural fat transfer for the replacement of deep facial structures. Structural fat transfer was carried out following the "RF Code" protocol, and three clinical tools were used to analyze facial volume before and after the intervention. According to the results, the protocol is characterized by its simple application and offers the flexibility to adapt different volume and regeneration effects according to the specific needs of each surgical area.(Charles-De-Sá, Gontijo-De-Amorim, Coleman, & Rigotti, 2021)

4.4 Distribution of scientific production by area of knowledge

Figure 4 shows the distribution of the preparation of scientific publications based on the area of knowledge through which the different research methodologies are implemented.

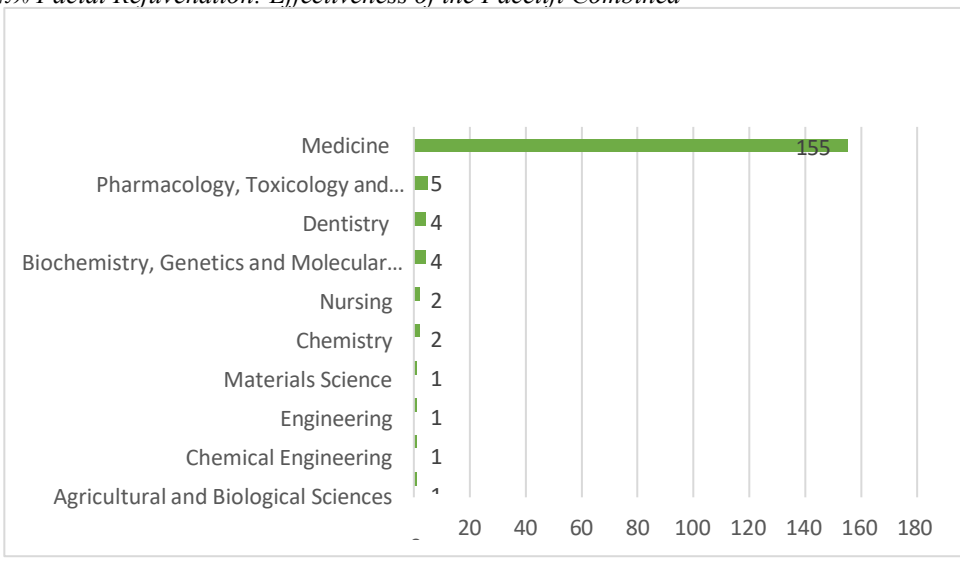

Figure 4. Distribution of Scientific Production by Area of Knowledge.

Source: Authors' elaboration (2024); based on data provided by Scopus.

Due to the very nature of the study presented in this document, Medicine turned out to be the area of knowledge with the greatest influence within the execution of the different research methodologies implemented by the different expert authors in facial rejuvenation and lifting, with a total of 155 publications registered in Scopus. There is a notable disparity in the distribution of publications between the different areas of knowledge. Medicine clearly dominates the field, while other areas have minimal representation. 88% of the documents identified through the search implemented on this platform correspond to research works whose central theories are based on the area of medicine. Among the main documents evidenced, the work published by the authors Yin, Zhang, Xinyu Li, and Han entitled "Microliposuction and radiofrequencies combined with the thread technique as a new method used in the lower facelift" whose objective was to combine, in 57 patients, the procedures of facial microliposuction, radiofrequency and thread lift technology as a comprehensive treatment (LRT) for facial rejuvenation. These tests demonstrated how this technique turns out to be minimally invasive with satisfactory effects for patients with flaccidity in the facial area, and their recovery faster and safer than that of procedures that seek similar objectives. (2022)

Despite the predominance of medicine, there is a diversity of areas of knowledge represented, suggesting that the topic of the study (probably related to facelift and cosmetic surgery, given the above context) has applications and relevance in multiple disciplines. The graph illustrates that research in the specific area of the predominant content, related to aesthetic and medical procedures, is heavily concentrated in medicine, with some minor contributions from other scientific disciplines.

4.5 Type of publication

In the following graph, you will see the distribution of the bibliographic find according to the type of publication made by each of the authors found in Scopus.

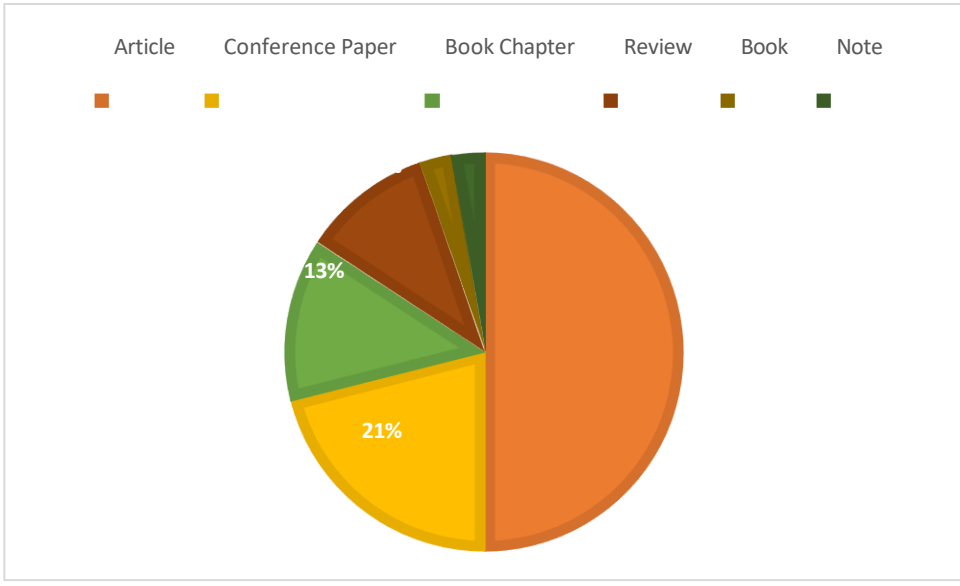

Figure 5. Type of Publication.

Fountain: Own elaboration (2024); based on data provided by Scopus.

The graph shows a strong preference for the publication of research articles (50%), followed by conference papers and book chapters, with a diversity of other types of publications present to a lesser extent. This reflects a balanced approach to disseminating knowledge through scientific journals as well as conferences and books. Half of the publications are research articles, which is typical in many academic areas where scientific journal articles are the main means of communicating research results. Although articles and conference papers are predominant, the presence of book chapters, reviews, complete books, and notes suggests a variety in the ways in which knowledge is disseminated. The significant proportion of conference papers underscores the importance of these meetings to share and discuss new findings with the academic community.

Conclusions

Thanks to the bibliometric analysis presented in this article, it is possible to conclude that the scientific publications on facial rejuvenation and facelift, during the period between 2018 and 2023, have achieved notable advances in terms of technology aimed at a cleaner process, with a recovery of the patient in better time and satisfactory results for them and the medical area. However, the volume of published articles has been decreasing over the years, which would be the subject of new research, as it is hoped to find new and better ways to surgically intervene patients whose needs, although diverse, are important to attend to with the greatest certainty of achieving satisfactory results. Therefore, it is possible to affirm that it is absolutely necessary to identify which are the techniques with the highest percentage of success in practice to increasingly potentiate these procedures focused on the reconstruction, recovery and rehabilitation of human anatomy.

With respect to the study evidenced in the different documents cited in this text regarding the study of facial rejuvenation and lifting practiced from stem cells and lipograft techniques, it is possible to conclude that:

Both methods, both the stem cell facelift and the lipograft facelift, are effective in improving facial appearance and reducing signs of aging.

Patients treated with stem cells showed significant improvement in skin elasticity and quality in the long term.

Patients who received lipograft showed immediate improvement in facial volume and contour.

The durability of the results was slightly higher in the stem cell group, with less need for additional procedures compared to the lipograft group.

Both procedures had an acceptable safety profile, although lipograft was associated with a higher incidence of minor complications such as inflammation and partial graft resorption.

Stem cells may offer an advantage in terms of long-term skin rejuvenation, being especially useful in patients with more damaged or aging skin.

Lipografting, being a more consolidated technique with immediate visible effects, can be preferred for patients looking for quick results and a significant improvement in facial

volume.

For all of the above, it is concluded that the facelift with stem cells and lipograft techniques are viable and effective methods for facial rejuvenation. The choice of method will depend on the patient's individual needs, preferences, and specific medical evaluation. Personalized medicine and detailed consultation with an aesthetic specialist are essential to achieve the best results.

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